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The BLUE JAY

A JOURNAL OF NATURAL HISTORY AND CONSERVATION
FOR SASKATCHEWAN AND ADJACENT REGIONS

Vol. XXIX, No. 4 Regina, Saskatchewan December, 1971

Musk Ox on Ellesmere Island Photo by Dalton Muir

Published quarterly by the
SASKATCHEWAN NATURAL HISTORY SOCIETY
Regina, Saskatchewan

CANADIAN NATURE FEDERATION

Many times in the last few years, as we gave protection to our birds of prey, developed a sanctuary for the prairie dog or tried to save some of our grassland or boreal forest, we have wished for the existence of a national body to help us in our efforts. Now, with the creation of the Canadian Nature Federation, we have the machinery for a strong national natural history organization.

Ideally there will be three levels in the natural history movement. Each community will have its local natural history society which can have regular meetings and develop various educational programs, including field trips. Such a group, large or small, will recognize the existence of problems and, if it needs help in solving them, should be able to seek consultation with both the provincial and national groups. In Saskatchewan the Saskatchewan Natural History Society is the intermediate group which attempts to publish informative articles and to acquaint people with problems which relate to the province. The Canadian Nature Federation is now the national group which will link all provincial groups and which should become an effective national voice.

The first president of this nation-wide group is Dr. Theodore Mosquin, Editor of *Canadian Field Naturalist* and botanist in the Canada Department of Agriculture. The organization has evolved from the Canadian Audubon Society which began in Toronto in 1948 but which became increasingly concerned with problems all across Canada. The constitution has now been revised to allow for a truly national society with directors respresenting every part of Canada. The magazine *Canadian Audubon* will not be published after the end of 1971 and the new, more substantial *Nature Canada* will make its first appearance early in 1972.

Dr. Jim Jowsey and I represented Saskatchewan at the inaugural meeting of the Canadian Nature Federation on September 18, 1971. We were impressed by the enthusiasm and optimism of the 403 people who registered. The meeting was similar in tone to that of our own annual meeting, friendly and very busy. There was an exhibition of the work of nature artists; there were reports, informative talks and films, field trips, a banquet and a special guest speaker (J. A. Livingston). This year the business part of the meeting included the presentation of letters patent which make the CNF a legal entity. The afternoon program included descriptions of problems from Sable Island in the east to Manning Park in the west to the Arctic in the north. The paper on the Arctic which was presented by Dalton Muir is printed in this issue of the *Blue Jay* to indicate the general concern of the meeting for environmental quality. Each annual meeting (next year's is to be held in Edmonton), along with the new magazine, should provide good factual information both for society members and for the general public, in the hope, of course, of arousing the latter to active involvement.

The national group will not charge provincial or local groups any affiliation fee. Instead, the organization will depend entirely on individual members who are interested in nature and anxious to support the cause of conservation. The regular membership fee of $6 will go to the production of the magazine; additional amounts will be welcomed and acknowledged as donations. To publicize the new national group to SNHS members we invited CNF director Helen Lloyd of Winnipeg to speak at our annual meeting, October 16, 1971, in Moose Jaw. Following her talk it was agreed to send a $500 donation to Canadian Nature Federation to help it get started. It is hoped that many individual members of SNHS will join the new society and urge their friends to join. Send cheques to Canadian Nature Federation, 46 Elgin Street, Ottawa, Canada KIP 5K6. Since CNF has just been organized, it is still untried and undeveloped but, designed as it is for the good of us all, it is our responsibility to make it work.

G. F. Ledingham.

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IN REMEMBRANCE
LLOYD CARMICHAEL (1894-1971)

by **Elizabeth Cruickshank,** Regina

Our first conversation with Lloyd Carmichael took place in 1913, in a room at Teachers' College in Fredericton, New Brunswick. Our last conversation took place in a hospital ward two days before he passed away. In each case the topic of discussion was plants. For plants were a lifetime interest of Lloyd's, an interest which had been whetted when, as a boy, he shared with his brother a diploma awarded at the Provincial Exhibition for the best school collection of wild flowers.

At Teachers' College in Fredericton in 1913, prospective teachers had met to choose an editorial board for the monthly magazine. Lloyd Carmichael was given the job of Business Manager. After elections were over, students were sharing information on locations where certain species might be found for their botany folio assignment. Lloyd enthusiastically offered to act as guide to haunts of rarer specimens. He knew the area well as he had taken his secondary education in the capital city. So we accepted his help, and found him a charming guide, pausing frequently as one autumn bloom after another was encountered to point to it and quote a line or poem on the subject written by his cousin, Bliss Carman:

The palish asters along the wood,
A lyric touch of the solitude . . .

He had been steeped in poetry by a sensitive mother, a poet herself.

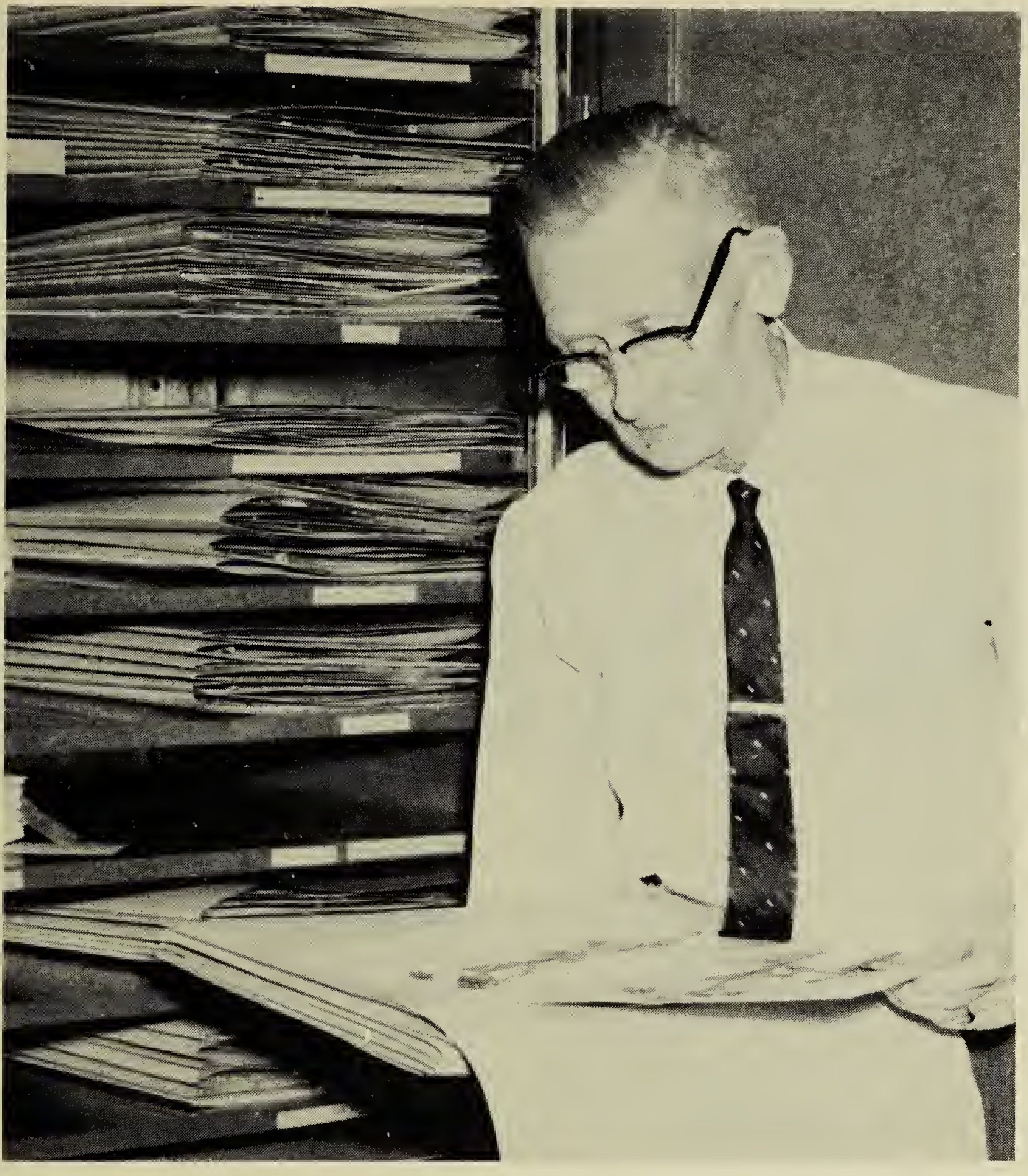
Lloyd was also familiar with every woodland path near his birthplace at Clifton, on the beautiful Kennebecasis River, and he shared Carman's feeling for "The Joys of the Road", a favourite and oft-quoted selection. Nearly sixty years later, in his hospital room, he wanted to hear about the plants that were in bloom in the recently-dedicated acres of native prairie in Wascana Centre. We described one field completely covered with white daisies and his lucid mind remembered a field of those same beautiful chamomile blossoms he had photographed near King's Park years ago. He had entered it in a photographic contest promoted by the Regina Natural History Society. The field of flowers, like those in Wordsworth's line, "Ten thousand saw I at a glance", flashed upon his inward eye—and then his eyes closed. Sedation had taken effect, easing his constant pain.

In the years between these two conversations, Lloyd's psalm of life, his simple steadfast faith, had remained intact. His love of beauty and his appreciation of its significance in the visual world about us and in literature, made the choice of Canon Turnbull in the eulogy at his funeral service illustrating Lloyd's quest in life, most fitting. Canon Turnbull chose the children's hymn:

All things bright and beautiful,
All things great and small,
All things wise and wonderful—
The Lord God made them all.

He gave us eyes to see them,
And lips that we might tell
How great is God Almighty
Who has made all things well.

Lloyd Carmichael's years were all active and earnest years, even to the last. After receiving his science degree from the University of Manitoba, he spent nearly half a century teaching in Saskatchewan schools at Conquest, Tisdale and Regina. While he was teaching science at Scott Collegiate in Regina, his laboratory long after school hours was a magnet for interested students. While at Scott he co-authored with J. E. Adair a textbook for Grade Twelve, *Science Discovery and Progress.* When deafness brought communication problems to the classroom he moved to serve in the Correspondence School. Later, with an



Saskatchewan Natural History Museum Photo

Lloyd Carmichael in Museum Herbarium

operation restoring his hearing, he returned to teaching, this time in upgrading classes.

His book, *Prairie Wildflowers,* illustrated with the author's photographs, is used as a textbook in Saskatchewan schools. He also prepared popular booklets with line drawings on the plants of special areas. He had hoped to compile a volume on all the plants of his adopted province, but years of illness prevented him from doing this.

For seven years, from 1948 to 1955, Lloyd Carmichael was the dedicated editor of the *Blue Jay* magazine. When he relinquished that office, he expressed the hope that the *Blue Jay* would remain a magazine covering widest fields of nature and stressing its preservation for naturalists who love wildlife for its own sake, not just as a scientific study.

In editorials, like Burroughs, he named the three most precious resources of life: friends, books and nature, the greatest — nature. He quoted Alan Devoe who declared a naturalist has two worlds, the far and the near, the great and the small. In the one he can be a big man and know lots. In the other he must find himself little and very ignorant. But he can find there, too, adventurings for all

Saskatchewan Natural History Museum Photo

A field of chamomile

his days. "Most of us", commented the editor, "belong to the little world. We get satisfaction in the knowledge that we, too, can derive happiness by merely observing the stories that nature unfolds to us in our backyard, in our meadow and by our roadside."

We can recall many instances of his desire to share his own happiness, prompted by love for his fellow men. Let me cite one. A fellow Maritimer, assisting him in planning one of the nature trails, remarked on a plant so missed in the West, the Jack-in-the-pulpit. Later that year Lloyd was visiting his old home. It was past the plant's blooming time, so he brought back corms, kept them for the winter in his unheated garage, and when spring came presented three stalwart "Jacks" to the exile from the East.

Lloyd served as president of the Regina Natural History Society, which honoured him with a life membership. He was a charter member of the Saskatchewan Natural History Society. His extensive collection of plant specimens he donated to the Saskatchewan Museum of Natural History, and he became honorary curator of its herbarium.

When illness curtailed his wanderings he took up brush and paints to preserve on canvas scenes that pleased him and to portray favourite plants whose personality could not be captured in photographs. His last years were made especially happy when one of his grandchildren found a similar joy in painting and won awards for her work.

Through the years, Lloyd had built a storehouse of joy which sustained him to his last hour. He had woven with strong threads a web of life with a bright and golden filling. To his widow and family we extend on behalf of all members of the Society, sincere sympathy in the loss of a truly great person who left behind him glorious footprints on the sands of time. Quoting again from Carman's "The Joys of the Road", we take leave of a friend, naturalist, author and artist:

O leaves, O leaves, I am one with
you,
Of the mould and the sun and the
wind and the dew!

PRIMITIVE MAN'S RELATIONSHIP TO NATURE

by **Daniel A. Guthrie,** Claremont College, California

In discussing the causes of our environmental crisis, many authors seem to consider modern man's relationship to his environment as somehow unnatural. This attitude is due, in part, to a belief that primitive man lived in harmony with nature, a harmony that has been lost by modern society. Both Christianity (White, 1967) and Christianity coupled with technology (Roszak, 1969) have been blamed for this loss of harmony with nature. Yi-Fu Tuan (1970) and Richard Wright (1970) have disputed this belief by showing that Christians are not alone in their exploitation of the environment but share this trait with other cultures. Still, the attitude persists that primitive man, epecially the American Indian, was somehow attuned to nature. This belief appears in Stewart Udall's book *The Quiet Crisis* (1964) in which he speaks of the land wisdom of the Indians, and in Theodore Roszak's *The Making of a Counter Culture* (1969) in which the kinship of primitive man to nature, as reflected through his belief in spirits and magic, is taken as an indication of a primitive ability to live in harmony with the environment. More recently Fertig (1970) has attempted to show that "Indians were part of a natural order between whose people and other animal and plant life there was a well-nigh perfect symbiosis" and concluded that "the Indian's nearly forgotten land wisdom, his ecological sense, is indispensable to our survival." It is my contention that primitive man was no better in his attitude toward his environment than we are today and that the concept of primitive man living in harmony with nature is a serious distortion of the facts.

For the purposes of this discussion, primitive cultures can be viewed as differing from modern society in three significant ways. The first two of these are in population size and in the level of technological sophistication. The populations of primitive peoples were small and the waste products of their cultures were for the most part biodegradable and did not occur in such concentrations as to overwhelm the ability of natural systems to deal with them. The situation is far different today. Not only is our population density such that our wastes cannot be accommodated easily by natural processes, but we turn the resources of our environment into new synthetic forms that cannot be degraded by natural processes and that may actually poison them. Furthermore, our technological sophistication allows a much greater level of consumption than was possible for primitive man. This very real *difference in ability* to affect the environment between primitive people and modern society must not be confused with a *difference in attitude* toward the environment.

The other significant difference between modern society and primitive cultures is in the way that primitive people view nature. The religions of primitive peoples, full of spirits and myths, often express a kinship with nature or what Cassirer (1944) calls a sympathetic view of nature. This view is often expressed by American Indians when speaking of nature. Roszak quotes a Wintu (California) Indian as saying:

> The white people never cared for land or deer or bear. When we Indians kill meat, we eat it all up. When we dig roots, we make little holes. . . . We shake down acorns and pinenuts. We don't chop down the trees. We only use dead wood. But the white people plow up the ground, pull up the trees, kill everything. The tree says "Don't. I am sore. Don't hurt me." But they chop it down and cut it up. The spirit of the land hates them. . . . The Indians never hurt anything, but the white people destroy all.

Similarly, Udall (1964) refers to many Indian sayings such as "the land is our mother" and "Our fathers received the land from God" to show the reverence that the Indians had for their environment.

While primitive man thus may view his relationship with nature quite differently from modern man (see also Kluckhohn and Murray, 1956), his actions toward nature are another matter. Tuan (1970) has pointed out that a wide gap may exist between a culture's ideals and the expression of those ideals in the real world. This is not to deny that many Indian actions were and are ecologically sound. In order for primitive man to survive he, of necessity, had to develop a certain harmony with nature. To put it bluntly, those tribes that did not develop some "ecological consciousness" soon became extinct. However, I believe that this ecological consciousness was not arrived at through careful analysis of the environment, but rather through a trial and error approach. Harmony with nature, thus arrived at, did not prevent the existence of polluting habits, when these habits did not immediately threaten the survival of the society, nor did this harmony with nature prevent the acceptance of new inventions or ways of life that were ecologically disastrous.

Thus, the Sioux Indian, who would not drive stakes in his mother, the earth, or cut her with a plow, showed no qualms about driving a herd of buffalo over a cliff or about starting a range fire to drive the buffalo. The Indian, like the wolves, often ate only the choicest parts of the buffalo, the tongues, when game was plentiful, or left some of his kill unused (Wheat, 1967). Indeed, primitive man's hunting abilities are believed by Martin and Wright (1967) to have been the cause of widespread extinction of large mammals during the Pleistocene. Early man was nomadic in part because prolonged habitation in any one area depleted game and firewood and accumulated wastes to the extent that the region was no longer habitable. One wonders, looking at Mesa Verde cliff dwellings, what it was like to live over a garbage dump. Was their custom of throwing all garbage over the edge of the cliff in front of their homes any different from our current civilized attitudes?

Finally, it has been shown that the American Indian was quite willing to take advantage of advances in technology to further exploit his environment. Farb (1968) has documented the effect of the horse on the lives of the Plains Indians long accustomed to hunting and travelling on foot. The horse caused a revolution in hunting ability. Buffalo robes were a sign of wealth to the Plains Indians and with the advent of the horse, the hunter could kill more buffalo than one woman could clean. The result was that good hunters had many wives and even accepted as wives men who did women's work, not for any sexual purpose, but so that more hides could be processed. There is some feeling that even if the white man had not overhunted buffalo with firearms, the buffalo would soon have been exterminated by overhunting on the part of the Indians. Other examples of acceptance of new technologies without regard to their long-range effect upon the environment are to be seen in the Navaho acceptance of sheep, and the subsequent over-grazing in the Southwest, and in the litter of bottles and junked cars to be found on Indian reservations today.

Perhaps there are some primitive peoples living in limited areas such as islands who have a clear view of the limitations of their resources and of the need to conserve them. Lyle's story (1967) of the Tikopian Islanders, who refused steel implements because they could not make them, gives some indication of this. The American Indian, however, shared with the early white settlers of our continent a feeling that there were limitless horizons toward which he could expand. Despite his expression of a kinship with nature and his possession of a few ecologically sound practices, his actions show him to be no better than the early white settlers in his understanding of his basic dependence upon his environment.

A return to the "ecological intuitions and memories of the Red Man," as called for by some authors (Fertig, 1970), is not a solution to our current ecological problems. The Indian's actions toward nature were, and are, identical to those of modern man. What concern for the environment there was existed for the express purpose of guaranteeing human survival. A true reverence for nature, where nonhuman organisms are given a right to survival equal to that of man, has never been part of man's emotional makeup. Man shares with all other animals a basic lack of concern about his effect upon his surroundings. Grizzly bears tear up hillsides in search of ground squirrels and marmots and destroy trees and shrubbery in fits of anger. Herd animals cause erosion on the plains by wearing paths in the topsoil. Many animals, such as bears and wolves, are known to kill more than is necessary for their survival when game is plentiful. We tend to view these actions of animals as part of nature's plan and so they are, but these actions are on a limited scale destructive of the environment. Furthermore, they are no different in kind from the actions of primitive or modern man. Man's attitude toward the environment has not changed in the millennia since his evolution from lower animals. Only his population size and the sophistication of his technology are different.

I personally doubt that large numbers of people can ever develop a new emotion of concern for their environment in which animal life is considered equally as valuable as human life. However, there are signs that this may not be necessary. Unlike many undeveloped countries the United States is not primarily concerned with the basic survival issues of food and shelter. Our great wealth allows us to concern ourselves with the "quality" of our lives. Furthermore, as we become increasingly withdrawn from the land, our interest in its preservation increases. Meier (1966) has pointed out that the cities, repeatedly castigated for their pollution, are the sources of most of our concern about resources. The rancher in Wyoming, living at a population density similar to that of primitive man, views coyotes and eagles as direct threats to his livestock, and prairie dogs and rabbits as threats to his crops. This frontier attitude toward nature is now seen in the angry reaction of many Alaskans to conservationists' efforts to prevent the development of the North Slope oil fields. One wonders, too, if those who abandon the cities for rural communes in order to avoid pollution and to return to a life style in harmony with nature will develop this frontier attitude toward the environment when their crops and livestock are threatened. It is the city dweller, divorced from a direct dependence upon the land, who has taken the lead in conserving our wildlife and natural areas. Urban citizens can afford to view the eagle and coyote as beautiful creatures, not economic liabilities, and to view land they do not own or have an economic interest in as worthy of preservation in a natural state. Further, it is the urban resident who is most affected by overcrowding and pollution.

To be sure, this attitude of concern stems more from self-interest in recreational use of the environment and in the quality of the air and water that we use than from any true respect for the right of nonhuman organisms. As such, we are likely to save "scenic wonders" and ignore swamps, or to favor oil production and development of boat marinas over protection of natural areas. Still, much can be done through informing the public as to what is truly in its interest. Many swamps have been saved, not out of a public interest in swamps, but because they were necessary wintering places for migratory game birds or spawning grounds for commercial shellfish.

Our population is becoming increasingly urban, and it will be the urban majority that will determine the nation's conservation policies and have a major voice in pollution and population control. As our population becomes increasingly divorced from the land, it is the duty of every scientist, working through every educational device available, to keep the urban American aware of the natural condition of his country and of his interest in its preservation.

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THE ENVIRONMENTAL CRISIS IN THE ARCTIC

by **Dalton Muir,** Canadian Wildlife Service, Ottawa

As the events of this day* fall into place, it is well to remember what has transpired. We have witnessed the emergence of a new entity, a national federation with a past heritage and a future role. Three concepts are represented:

- the basic human desire to understand the natural world,
- the human need for a high quality environment,
- acknowledgement that this need has not been met by our social and economic development to date.

This federation implies concern, insight and determination to change concept into reality. The federation is acquiring the necessary funds, identity, constitution and executive direction. It has the most opportune moment in the history of Canada for its emergence. Ten years ago would have been premature and unconvincing, ten years from now will be too late. At this time we have numerous crises, public awareness, and a popular demand for action. The tools for democratic change are at hand, a brand new federal department of the environment and provincial counterparts. The federation's key position between public and government is appropriate. Support from many like-minded organizations is assured and the stated principles and objectives of the federation cannot be attacked. The role is custom-tailored and waiting.

If all were *well* in the environment this federation probably would *not* be necessary and would not appear. We would still have the idyllic situation, long since departed, when there was plenty of natural environment for everyone. In those times, the very few natural scientists pursued strange pastimes and sought the close company of a few others of like mind nearby. These corresponded with distant colleagues, also few in number. To the venerable gentlemen who founded the Ottawa Field Naturalists in 1879 and the tiny Great Lakes Ornithological Club in 1905, the present hierarchy of provincial federations, national federations, international unions and world conferences on the environment would be mind-boggling. Now, less than 100 years later, the weight of current publications on natural history and the environment would soon surpass their lifelong library collections and would split their sagging shelves.

But all is *not* well in the environment. Both the quantity and the

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*This paper was read at the inaugural meeting of the Canadian Nature Federation, September 18, 1971.

Photo by Dalton Muir

Arctic beauty at Baffin Island

quality of desirable environment are decreasing. Alarm has been raised and action has resulted. Departments of the environment at federal and provincial levels now exist. They are dealing with problems in the urban environment and problems in the provincial countryside.

There is one part of Canada that we tend especially to forget unless some news item using the word “Arctic” comes to our attention. At such times we tend to wonder how there could be problems in the Arctic, “it is so big,” “there are so few people!” “It doesn’t seem to be good for anything unless maybe for oil,” and as an afterthought, “it does belong to us doesn’t it?”

Our Arctic regions make up about one-third of Canada, depending on how you define “Arctic.” It belongs to us. It is huge. It is strange. It is full of life and it is beautiful. It is the last true frontier, the last empty land. It is the ultimate challenge for Canada and Canadians.

For as long as I can remember there have been films, books, articles, TV programs and speeches on “‘“Canada’s awakening north.” Until six years ago these statements were, at best, exaggeration. Then the search for resources began in earnest and this search continues at a faster pace each year. Some of what has happened to date is grossly damaging. Our remotest Arctic is beset by problems: roads, vehicles, airports, too much “‘“civilization”, sewage, garbage, spilled oil, abandoned debris and an attitude that “it’s only the Arctic; it doesn’t matter.” But does it really matter, and if so, why?

At times like this I like to recall how a well-known movie actress some years ago played the part of a small town girl who had never travelled. When asked why she had not travelled, she replied, “I walked to the edge of town once and looked out, but there didn’t seem to be much out there.” Let us now see if there is anything “out there”, in our Arctic.*

Looking at the land is an old custom even here in the new world. The early explorers and developers of this con-

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*Accompanying his address, slides of the Arctic were shown to the meeting by Dalton Muir.

Photo by Dalton Muir

Iceberg at Bylot Island

tinent looked and noted the obvious resources, potentials, dangers and hardships. They also felt the awesome beauty in vast expanses of unoccupied natural landscape. They wrote of it in respectful tones. Men like Champlain, Rogers, Marquette and Joliet, Lewis and Clark, La Vérendrye and Palliser, looked at the mid-continent. Others such as Mackenzie, Hearne, McClintock, Hudson, Greely, and the ill-fated Franklin and Hall looked farther north. They too were able to see beyond the horror and hardship and speak of the strange beauty that stretched before them. Our nation has been looking at the Arctic with considerable interest in the last few years. But have we been looking with the eyes of men, a memory of evolving society and ability to plan for the future, or have we looked with the eyes of animals, eyes that see only food or danger and comprehend only the easy kill or the empty landscape and the empty stomach?

Events are moving forward, the Arctic is awake, the rush for resources is on. This rush has changed the face of the Arctic more in the last five or six years than had all previous human activity to that time. The combined effect of hundreds of years of Eskimo occupation, the early explorers, weather stations, defence installations, scientific activities and permanent European settlements has left its mark upon the land, but it is small compared to the heavy footprint of "the great resources rush."

This rate of change is *not* matched by the natural rate of growth and recovery of the Arctic environment. The marks of the early explorers are still visible in some places and the heavy imprint of the first vehicles in the Arctic is still very clear. Last year I saw again vehicle tracks which I had seen 15 years previously and found that they had not changed appreciably during that time.

Arctic plants grow and spread slowly. A sample of Arctic willow which I collected, when examined under the microscope, proved to have annual rings one cell thick. The stem of this creeping Arctic plant had increased in diameter so slowly because the cambium layer had divided only once each year. Willow is possibly the most important single food plant in the Arctic. With this low growth rate the total productivity of living communities on land must be very low indeed.

When a herd of Muskox or Caribou is spotted from an aeroplane, one is tempted to say "there are dozens of them." If a second or third herd is visible from the air at the same time in an unusually rich area, one is tempted to conclude that the Arctic landscape is overrun with game. But you must remember that you may be looking at all of the game in 500 square miles or more. And even this kind of abundance is possible only in limited and unusually rich areas. In much of the Arctic it is possible to pass over many, many hundreds of square miles and see no game animals at all. The well-known game ranges such as the South Melville Island Caribou range and the Foshiem Peninsula Muskox range on Ellesmere Island are probably unique in the entire Arctic. They in no way represent the productive capacity of the Arctic region as a whole.

The Arctic region and in particular the high Arctic islands have one characteristic which is of great interest to science and of potential value to society. The web of life, the so-called ecosystem, is a simplified one. There are relatively few species and the theoretical number of possible interactions is limited. Food chains and pyramids of numbers are short and truncated. Single species dependencies are common and the loss or introduction of one species may be disastrous. An area with these characteristics is of particular value to science as a natural laboratory for the investigation of the characteristics of ecosystems. As the human population approaches the carrying capacity of our planet, it will become more important to understand clearly basic characteristics and limiting factors of the ecosystem.

It is of special interest to Canadians that this reduced ecosystem of our Arctic is something like a replay of our origins and past history in southern Canada. The whole Canadian landscape, at least all of it that matters for present purposes, was glaciated, covered deeply by ice during the last ice age. All plant and animal life that we know today as being "natural" or "native", has arrived and developed since the ice left. Unless we understand what potentials and limitations are imposed on us by our past, we cannot plan with certainty for the future.

Another special characteristic of this Arctic ecosystem is of importance to science and hence to mankind. The Arctic ecosystem is one of the very few ecosystems which persist under approximately the same conditions in which they evolved. The importance of this characteristic may not at first be obvious but there is reason to believe it may be an important clue to understanding the whole natural order.

The Arctic has been described as sensitive and fragile. These terms may sound strange to us down here. What can be harder or more durable than mountains, glaciers and permanently frozen ground? How can these be fragile? The answer is that if they melt only a little, they become very vulnerable indeed, more so than if they stayed completely frozen, or if they melted completely each year as our land does down here. This thin layer of melted soil, the so called "active layer", is the Achilles' heel of the Arctic landscape and therefore of most living things in the Arctic. Much of the Arctic soil is fine silt, sediment, clay and peat. In

Photo by D. Muir

Arctic lupine at Lupine-Tuk Penninsula

the spring, as it melts downward a foot or so, it becomes waterlogged. It takes on the consistency of bread dough or, with a little more water, becomes like stew. It is greasy and slippery beyond belief, sticky as only those familiar with prairie gumbo can appreciate. It cannot drain downward because of the thousand feet of permanently frozen ground beneath. The soupy or doughy soil washes away with the spring run-off, slides downhill in sheets over the slick frozen soil beneath, or falls away from cliff faces and steep hillsides. Soils which have stabilized over the centuries are bleached by sun and soluble minerals are leached out by water. The surface tends to be light in colour. Any activity which breaks through this light-coloured surface skin exposes the darker and wetter soil beneath. A bulldozer is a nearly perfect instrument for this purpose. The exposed dark soil traps more of the sun's heat than undisturbed land near by, causes increased melting of the permafrost and creates a pocket of deeply-thawed, wet soil. If the water can escape downhill it does so, carrying with it most of the newly-thawed soil and starting a chain reaction of progressive erosion. We call this landscape fragile because it reacts to a small local change by producing a large widespread progressive result. Eventually, of course, a new equilibrium is established, but it is scores or hundreds of years before the slow process of revegetation produces useful food for animals. Much of the high Arctic landscape possesses this unstable characteristic. This factor is of critical importance to wildlife because the best wildlife range vegetation is usually found on rich, fine silty soils, the most unstable kind that the Arctic has to offer.

How serious is the damage to the Arctic? The question is too complicated to answer fully here but I will try to give you a broad general view of it.

EXTENT

Every major Arctic island and the Mackenzie River lowlands bear the marks of resource exploration, most of it in the search for oil. The territorial mainland lying within the Precambrian region, along with Baffin Island, is spotted with mineral resource activities. The Hudson Bay lowlands are being probed. Vast stretches of sea between the Arctic islands and much of Hudson Bay itself are also being

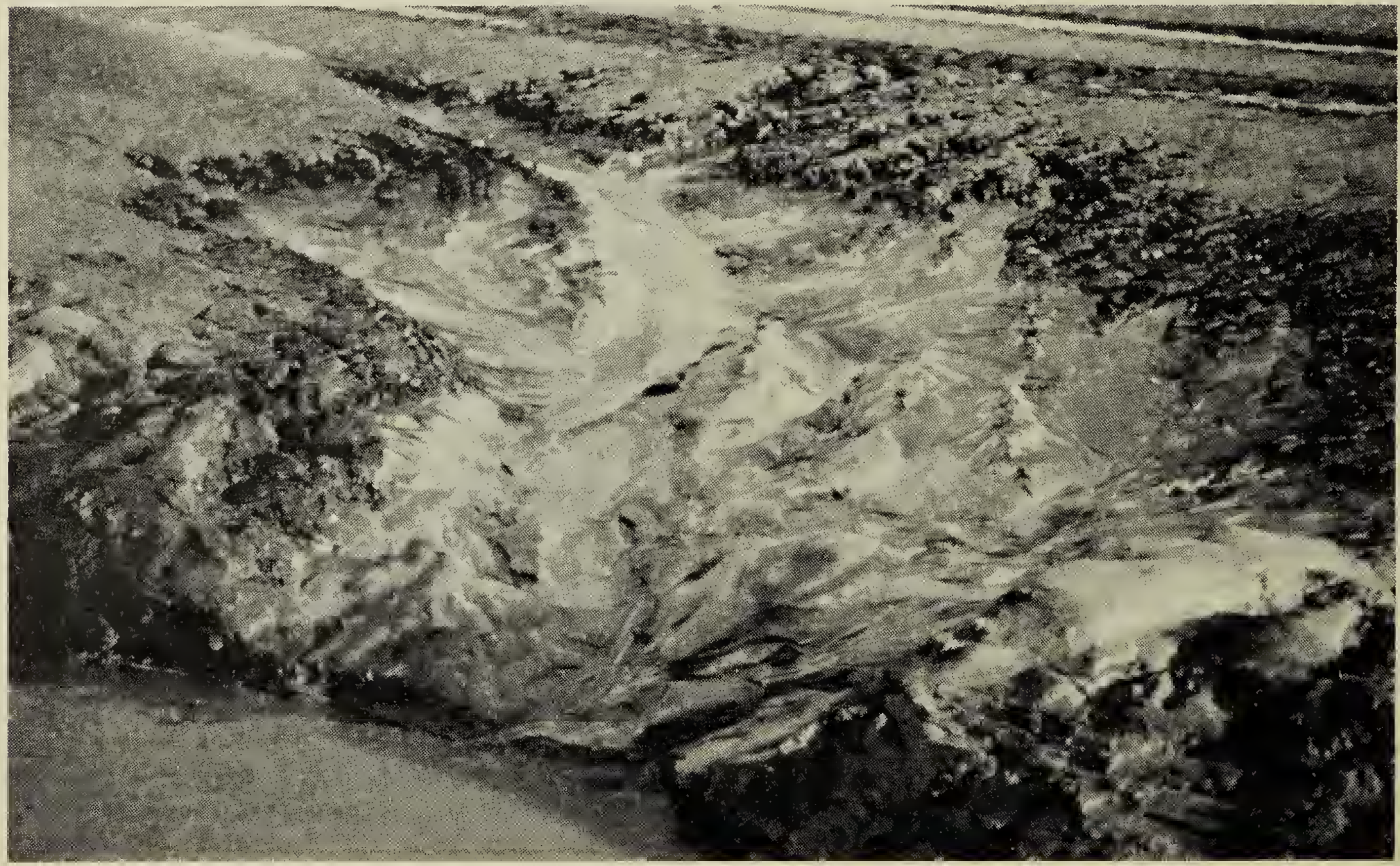

Photo by Dalton Muir

Erosion below a bull-dozer track

Photo by Dalton Muir

Scars on a fragile environment

probed. The Beaufort Sea, Baffin Bay and Fox Basin are relatively new "hot spots."

IMPACT

In general, seismic prospecting for oil during the summer months does the most widespread, serious and long lasting damage to the landscape. Summer use of tracked vehicles for point to point overland transport of materials is grossly damaging and is second only to seismic activity as a source of terrain damage. Drilling for oil produces utter devastation locally, on the sites themselves, and around the mile-long airstrips used to transport the rigs and other equipment. These sites, of course, are relatively small, a few acres for a rig, half a square mile for an airstrip. However, construction of several successive airstrips around a single activity centre is commonplace when the original strip site is poorly chosen or inadequately prepared. Square miles of natural terrain are effectively obliterated. Mineral prospecting usually is a small scale operation; however, a mine and associated facilities, particularly if it is an open pit complex such as at Pine Point, may destroy many square miles of landscape. The overall impact of all activity appears most serious on the rich tundra of the Tuk Peninsula and on the mud environment of the high Arctic islands, especially Melville Island. Effects range from slight damage to total obliteration. The Arctic terrain will recover from slight damage but it will not recover from total obliteration and progressive erosion within a human lifetime, probably not for centuries.

FUTURE

What of the search for resources? It will go on increasing in pace and extent for many years, even if nothing more is found. If hoped-for resources are discovered, the resulting burst of development activity will be limited only by the extent of the discovery and the hope that it holds out for further discovery.

Can the search for resources in the Arctic be stopped? The answer is a firm NO. And it should be added that in the interests of our resource-consuming society, the search should not stop.

Can activity and damage in the Arctic be controlled and lessened? The answer here is a resounding YES. The damage in the Arctic to date is largely the result of haste, inadequate research and planning, trial and error methods using the cheapest way, the mistaken assumption that there is nothing else of value in the Arctic, and a general disregard for the ethics of landscape use. These problems can be solved through a combination of education, experience and legislative control. The forthcoming northern land use regulations should improve the situation. My branch, the Canadian Wildlife Service, now in the department of the environment, has produced preliminary ecological maps of the Arctic. My own work consists mostly of adding to ecological and environmental information on the Arctic islands and monitoring the possible effects of all human activity on wildlife in the Arctic.

PROGRESS

It is very important to note here that during the past year there has been a marked improvement in the operating procedures of most well known oil companies in the Arctic. The brand name companies that you would recognize at local gas stations are trying with considerable success to clean up their Arctic operations, probably out of a combination of genuine concern and a desire to preserve the corporate image. It should be stressed that while there has been improvement, much more improvement is needed before acceptable conditions prevail. If all else fails, legislative regulations will be available which can close down an operation.

From such glum topics let us turn to look at the bright side of the picture in the Arctic. I refer to the aesthetic value of the Far North. I have left this topic for the end because it may well be the longest-lasting, most beneficial and certainly the most enjoyable resource the Arctic has to offer. You have all seen something of the beauty of the Arctic through photographs. There is practically unlimited scope for exploration and travel on Canada's last frontier. Summer temperatures are invigorating. There are no flies to speak of if you go far enough north. There is bright twenty-four hour daylight. The landscape of mountains, glaciers, icebergs, with strange plants and animals, unusual land forms and vast reaches of solitude is ready-made for the person who wants to get away from it all or experience something new and different. The high Arctic was once inaccessible. You can now buy your air ticket over the counter in Montreal or Edmonton and have stewardesses serve food and drink all the way into Resolute Bay in the centre of the high Arctic islands. A plain but adequate hotel with bar awaits you there. Five minutes walk from the hotel, a commercial charter airline will fly you anywhere in the Arctic in a fleet of planes ranging from fabric-covered Cubs to a DC3. This year in the western Arctic, a commercial tourist agency started taking visitor groups down the Mackenzie river and over to Tuktoyaktuk. My own mother was on one of the first trips and I would refer you to her for a glowing account of the experience. I darkly suspect she is working for the travel agency in a public relations capacity.

Where does Canada stand now in the Arctic? The Arctic is ours, it is vast, rugged and beautiful. There are known valuable resources in the Arctic and the chances of vast wealth are good. The Arctic has already suffered widespread and serious damage and there will be more damage. Governmental control over activities is expected to reduce the rate, seriousness and impact of environmental damage. What of the future? I suggest to you that no matter what resources may or may not be found in the Arctic, the greatest long term benefit to Canada from our Arctic environment may well be a "safety valve" effect to relieve the pressures of too many people, too much stress and conflict, too much pollution and degraded environment. These benefits and the deeper insight into the total Canadian environment gained through study of our Arctic lands may well be our most priceless heritage, a resource not available to some less fortunate societies.

Groups such as the Canadian Nature Federation can perform a valuable service by pressing for maintenance of environmental quality in Canada, especially in that less-known one-third of our land which we call "'Arctic".

RIGHT-OF-WAY RESOURCES OF THE PRAIRIE PROVINCES

by **Robert B. Oetting,** Manitoba Department of Mines, Winnipeg

Introduction

One of the greatest dangers threatening North American wildlife is loss of habitat. The wildlife crisis arising because of intensified land use and expanding human populations is already manifest in reduced wildlife populations and endangered species. The rate at which land is consumed by homes, buildings and transportation facilities is a pressing concern. As man continues to alter his environment he must be sure immediate benefits do not result in long-term losses.

Accounts of squandered resources and destroyed natural areas fill our news media. To counter these trends, wildlife agencies, public and private, have developed programs of land preservation. Wildlife habitat is bought, rented, eased, mitigated and begged, but losses still far exceed gains.

Now other lands of promise await development. These are the right-of-way lands, inseparable kin to roads, highways, railroads, pipelines, utility transmission lines and irrigation and flood control projects. Most of these lands are publicly owned and are potential wildlife habitat.

Some data on wildlife use of rights-of-way have been collected and reported in the course of land use projects, but comparative studies are rare. (Table 1). Joselyn, *et al* (1968) reported higher Ring-necked Pheasant nest densities and success in unmowed rights-of-way on secondary roads in Illinois than in mowed rights-of-way. Page and Cassel (1971) found higher duck nest densities and success along unmowed railroad right-of-way in North Dakota than along mowed parcels.

Our research (Oetting and Cassel, 1971) along Interstate Highway No. 94 in Stutsman County, North Dakota revealed higher duck nest densities and success in unmowed blocks than in mowed blocks. We studied 630 acres of I-94 roadside along 23 miles in 1968, 1969 and 1970. We found 422 duck nests which had an overall success of 57 percent. When alternate one-mile

A Ring-necked Pheasant flushes from right-of-way cover along Interstate Highway No. 9 near West Fargo, North Dakota. Game birds in the intensely-farmed Red River Valley rely heavily on rights-of-way for nesting and winter cover.

blocks of the study area were left unmowed in 1969 and 1970, significantly more ducks chose unmowed portions for nest sites, and nest success in unmowed blocks rose to 62 percent, while success in mowed blocks was only 51 percent. In addition to ducks, nests of Sharp-tailed Grouse, Gray Partridge, Killdeer, Upland Plover, Mourning Doves and American Bittern were found along the busy Interstate right-of-way.

Our final maintenance recommendations to the North Dakota Highway Department included reduced mowing of rights-of-way and later beginning mowing dates, to allow more nests to hatch.

It is gratifying to report that the Department responded to those recommendations and altered maintenance methods on the I-94 right-of-way from Tower City to Tappen, a distance of 78 miles and an area of about 2,000 acres. The Department also delayed the start of mowing on primary and secondary roads from July 5 to July 15 to allow more nests to hatch. In the process the Department has saved nearly $100,000 annually in maintenance expenses (J. Kyser, personal communication).

Right-of-Way Data

The Prairie Provinces boast a huge right-of-way resource (Table 2). The highways, roads, railroads, power transmission lines and diversion waterways of Manitoba, Saskatchewan and Alberta cover more than two million acres.

Most of this acreage is located in agricultural areas where its value to wildlife is probably high. In some areas rights-of-way through northern bush country help wildlife by creating edges and openings in solid stands of timber. Many species are found in greatest abundance along such edges or ecotones. In agricultural areas rights-of-way may offer the only cover for game birds and small mammals.

Following are summaries of rights-of-way maintenance information, by province, as reported by various pri-

Table 1. Game bird nests found on rights-of-way compared to other areas searched.

State	Percent of study area as roadside	Percent of nests found in roadside	Source
Nebraska	1.2	28	Evans and Wolfe (1967)
Nebraska	<1.0	25.1	Wolfe and Evans (1967)
Minnesota	2.0	25	Chesness (1965)
Nebraska	<2.0	24	Linder *et al.* (1960)
North Dakota	1.4	57	Fisher (1955)
North Dakota	2.0	43	Fisher (1954)
North Dakota	2.6	27	Bach and Stuart (1942)
North Dakota	Shorelines and roadside had highest nest densities.		Martz (1967)
South Dakota	Pheasant nest densities highest on roadsides and fencerows.		Trautman (1960)
Manitoba	Duck nest densities highest on roadsides and hayfields.		Milonski (1958)
Iowa	Roadsides best for production of pheasants.		Klonglan (1955)
Michigan	Majority of pheasants produced in roadsides and ditchbanks.		Schick (1952)
Wisconsin	Roadsides preferred by nesting Gray Partridge.		Hawkins (1937)

vate and government agencies:

Manitoba: The Department of Public Works and Highways attempts to mow 111,300 right-of-way acres of provincial trunk highways and roads. On main highways one mowing is completed each summer; on other important roads mowing is done only every other year, except for inslopes. In 1970 mowing maintenance cost the Department nearly $250,000 and could run as high as $375,000 for 1971. Mowing is usually done in late summer or early fall when most wildlife species have concluded their nesting activities (A. MacLeod, personal communication).

Saskatchewan: The Department of Highways and Transportation mows provincial roads and highways twice per year. A "beautification" mowing is done on 10,000 acres near cities, towns, interchanges, junctions and medians of divided highways. A later mowing is a repeat of the early mowing and a top cut along paved highways. The entire right-of-way (about 30,000 acres) of certain highways is mowed to control noxious weeds and rank growth. A third mowing in fall is performed on inslopes for snow control. Other mowing throughout the summer is designed to retard brush and maintain sight distances. The snow-brush-sight maintenance involves about 50,000 acres. Total right-of-way mowing, litter removal, reseeding and erosion control cost was $1,154,220 in 1970 (R. Scott, personal communication).

The Saskatchewan Power Corporation spends about $78,000 annually to sterilize soil around the base of structures in agricultural land and chemically control brush in forested land (M. Offet, personal communication). Pipelines operated by Gulf Oil Canada, Ltd., are buried and require no maintenance (L. Watson, personal communication).

Alberta: The Department of Highways and Transport mows highway inslopes once during the summer and the entire right-of-way once, resulting in a double inslope mowing each year. In some areas adjacent landowners are allowed to take hay or cultivate high-

Table 2. Acreages of various types of right-of-way in the Prairie Provinces.

	Approximate acres			Total by
Type of right-of-way	Manitoba	Saskatchewan	Alberta	type
Provincial highways	72,135	140,000[1]	8,646	
Provincial roads	84,097	....	80,436	
Municipal roads	288,484	Unknown	86,400	
Unimproved roads	Unknown	Unknown	484,848	
TOTAL KNOWN ROADSIDE[2]	444,716	140,000	660,330	1,245,046
CN railroad	29,866	42,763	20,295	
CP railroad	18,220	38,157	29,333	
TOTAL KNOWN RAIROAD[3]	48,086	80,920	49,628	178,634
Powerlines	79,260	312,410	91,857	483,527
Water diversions, reservoirs drainage ditches, etc	82,803	Unknown	Unknown	82,803
Pipelines	....	27,448	Unknown	27,448
TOTAL RIGHT-OF-WAY ACREAGES	654,865	560,778	801,815	2,017,458

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[1] Includes both provincial highways and roads.
[2] Does not include driving surfaces, medians, paved shoulders, etc.
[3] Does not include rails or rail ballast.

Photo by Ed Bry

Day-old Mallard ducklings explore their environment on the right-of-way of Interstate Highway No. 84 in central North Dakota. These birds hatched three feet from a busy interchange approach ramp.

way rights-of-way. The cost of this mowing maintenance on Alberta highways in 1970 was $569,000 (M. Dolinsky, personal communication). Canadian Utilities Ltd., maintain powerline rights-of-way chemically or mechanically. The company spent $121,400 in 1970 for this maintenance (D. Flory, personal communication).

Discussion

Rights-of-way of provincial trunk highways, roads and railroads probably offer the greatest potential for wildlife habitat. Lesser roadsides may be too narrow for game bird production (biologists have found that predators are very efficient at "working" narrow strips).

Railroad right-of-way maintenance is not vigorous. Soil sterilants and herbicides are sprayed on a centre strip about 20 feet wide. The remaining right-of-way receives only local, spot treatment as required.

Where utility transmission lines cross agricultural land their rights-of-way offer little additional wildlife habitat, since they usually are farmed or chemically sterilized. In bush areas, however, utility transmission line rights-of-way may be very important for wildlife.

Drainage and water diversion projects vary in importance to wildlife. Many may be too narrow to support game birds, but could be made more attractive to many other forms of wildlife, including furbearers and song birds. Some larger ones, such as the Red River Floodway near Winnipeg (at least 1,000 acres of habitat) certainly could be easily improved for many kinds of wildlife and recreation facilities.

Pipeline rights-of-way may be negligible in wildlife value since most are buried. Those which are constructed above ground, however, could be improved and may already be benefiting wildlife.

Some income is derived from leasing right-of-way land, but overall maintenance of the Prairie Provinces' rights-of-way remains costly for taxpayers.

How many and what kinds of wildlife could be produced on the rights-of-way of Manitoba, Saskatchewan and Alberta remains to be seen. Some rights-of-way are already contributing; others could be improved. Likewise some are not important for wildlife and may even be detrimental. Intensified land use in southern regions will increase the value of this resource.

Citizens interested in an ecologically sound environment must view Canada's rights-of-way as their own property. Even where right-of-way lands are deeded to a utility or railroad a great deal can be done, for what private business is not interested in an improved environmental image these days?

Conservation groups must lead the way in right-of-way research and stimulate new concepts in right-of-way ecology. No longer can the general public, and especially professional ecologists and wildlife biologists ignore this staggering piece of real estate, which continues to grow at a record pace.

As Canada's environmental awareness sharpens and more potential resources are exploited, it is likely that the taxpayer, who owns most of the right-of-way resource, will demand an accounting.

A unique opportunity is thus at hand for government and railroad officials to "give back" right-of-way lands to the public. This would place native flora and fauna where nearly every citizen could see and enjoy it; it would create living laboratories and preserve strips of natural prairie; it would save many dollars now spent in maintenance. And finally, wild life would increase through proper habitat management.

Acknowledgments

Gathering right-of-way information from scattered ledgers and field maintenance reports is a difficult and exasperating task. Such figures as total acreage and maintenance costs are usually surprisingly elusive. Those government and private business officials who responded to my research questionnaire did an admirable job in gathering information about their respective right-of-way jurisdictions. Others did not respond and the right-of-way acreages and maintenance costs presented in this paper are therefore considerably underestimated.

I wish to thank A. MacLeod, R. Scott, M. Offet, L. Watson, M. Dolinsky and D. Flory for their efforts in supplying right-of-way information.

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THE OCCURRENCES OF SOME WESTERN BIRDS IN SASKATCHEWAN

by **Spencer G. Sealy,** Museum of Zoology, University of Michigan,
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During the last several decades, bird-watchers and professional ornithologists in Saskatchewan, as in other areas, have observed many species which are usually designated as "accidentals" or "occasional visitants." The true "accidental" as defined by Grinnell (1922) occurs but once in an area; it is geographically and usually ecologically "misplaced" and it is not expected to occur there again. Other species may be recognized also as "accidentals", but more on the basis of their geographical than ecological "misplacement." I intend here to examine several species which fall into the latter category; all of these species show centres of abundance in the mountainous regions of British Columbia, southwestern Alberta, and western United States but illustrate by their occurrences in Saskatchewan the remarkable mobility of birds in their dispersal from the centres of abundance and their enormous potential for locating distant units of suitable habitat.

Lewis' Woodpecker *Asyndesmus lewis*

The Lewis' Woodpecker has been observed in a variety of habitats throughout the southern half of the province (Figure 1), Mitchell (1924: 110) considered it to be an "uncommon visitant from the west." There is a specimen of an adult taken at Herschel on September 23, 1914 and three were taken in the Qu'Appelle Valley by G. Lang of Indian Head; the data from these latter specimens were lost but the birds were examined by Mitchell. Potter 1943:70) first observed this species near Eastend on September 19, 1919 and reported that "there are several other fall records, all in the same month." Houston (1949: 231) recorded "one shot by Frank Baines about three miles south and six miles west of Saltcoats, about 1920."

Maurice G. Street and E. W. van Blaricom saw a Lewis' Woodpecker at Tisdale on November 21, 1925 (Houston and Street, 1959) and Potter (1943:70) recorded spring observations (May 12, 1938 and May 26, 1939) at Eastend, and added that "there are reports of others about this date." Houston and Street (1959:115) considered this species as a "rare straggler at Nipawin, with a single individual seen flying over the Saskatchewan River on October 7, 1942."

Belcher (1961) designated this species as casual in the Regina area on the basis of three records from that region. Elizabeth Barker observed one prior to 1931 at Tregarva and T. M. Beveridge saw one on May 28, 1940 just south of Regina. Roy Anticknap reported to Fred G. Bard that he had seen a single Lewis' Woodpecker at Regina in the fall of 1946. The most recent record for southern Saskatchewan is an adult female collected by Richard W. Fyfe on June 5, 1959 to the west of the Regina area at Tuxford (Lahrman, 1959).

A Lewis' Woodpecker was seen twice in Kinloch in 1956 by H. Rodenberg (1956). At Keatley, A. P. Pym observed one during the first three weeks of October, 1957; the bird was last seen on October 18 (Pym, 1957).

The Lewis' Woodpecker breeds "from southern British Columbia, southwestern Alberta, Montana, and southwestern South Dakota, south to California, Arizona, and New Mexico" (Godfrey, 1966:242). This species is generally migratory; it winters mainly in southern states "although individuals may winter throughout range" (Salt and Wilk, 1958:255). Although only one nest has been found, Salt and Wilk (*op. cit.*) believe that it breeds regularly in the mountain region of the southwest corner of Alberta. Away from the mountains, individuals have

Photo by R. Fyfe

Lewis' Woodpecker

been recorded at Brooks, Sullivan Lake, Rosebud, Camrose, Belvedere, and Lesser Slave Lake, most of them during the fall migration period. This species has been reported in Manitoba from Winnipeg (Godfrey, 1966) and Churchill (Lamey, 1967).

Steller's Jay *Cyanocitta stelleri*

Saskatchewan records of the Steller's Jay are presented in Figure 1. Mitchell (1942) reported a specimen of this species taken near Indian Head on May 24, 1923, by G. Lang. Houston (1949:233) designated it as a "rare straggler" in the Yorkton area and stated that F. Baines "reports that a pair resided on a farm . . . about 8 miles south and 4 miles west of Saltcoats, one summer in the 1920's." A more recent Steller's Jay record was reported also by Houston: Miss Pauline Summers got a close-up view of a single bird near Yorkton in the spring of 1944. Previously, for about two months, officers of the Yorkton Natural History Society were told repeatedly of a "different kind of Blue Jay" notice having been drawn to it in most cases by its strident call.

The most recent observation of a Steller's Jay in the province was made on October 29, 1961 along the North Saskatchewan River near the Borden Bridge (Gollop, 1962).

According to Godfrey (1966:273), the Steller's Jay in Canada is a "'permanent resident in western and southeastern British Columbia (Stikine River, Poison Mountain about 60 miles north of Hazelton, and Yellow-head Pass southward including Queen Charlotte and Vancouver islands) and southwestern Alberta (Jasper and Waterton parks)." The specimen taken at Indian Head by G. Lang was examined by Mitchell (1924:112) and is "apparently referrable *to C. s. annectens*"; the A.O.U. *Check-list* (1957: 371) gives the range of this subspecies as "resident in the interior of British Columbia (Stikine River, Cariboo Disrict), southwestrn Alberta (Henry House, Banff), eastern Washington (Tunk Mountain, Calispell Peak, Walla Walla) . . . and northwestern Wyoming (Yellowstone Park). Casual in autumn and spring south of the breeding range in Wyoming (Hoback Mountain, Gros Ventre) and in southeastern Saskatchewan (Indian Head)."

Salt and Wilk (1958:299) pointed out that "occasionally in fall and winter individuals wander eastward. There are a few records of the occurrence of Steller's Jay at this season as far east as Glenevis, Whitecourt, the Swan Hills, and Cochrane."

Clark's Nutcracker
Nucifraga Columbiana

There are only a few observations of Clark's Nutcrackers in Saskatchewan, all but one of which are from the extreme southwestern corner of the province in the Cypress Hills region (Figure 1). This species was added to the list of Saskatchewan birds when a specimen was collected at Ravenscrag on September 19, 1919 (not September 17, 1919 as reported by Potter (1943) —Fred W. Lahrman (personal correspondence, October 16, 1970) examined this specimen (SMNH no. 1004) and confirmed the correct date), by Spencer Pearse, who noted several on his ranch that year (Mitchell, 1924). One was seen by Pearse in September, 1925 at Ravenscrag (Potter, 1943) and on August 18, 1960 Robert V. Folker observed a single bird also at Ravenscrag in the Cypress Hills (Folker, 1961). On October 8, 1963 F. G. Bard, C. S. Brown, and B. Tether saw a

Clark's Nutcracker in the Cypress Hills (Bard, 1964).

The only record of this species outside the Cypress Hills region in Saskatchewan was obtained by D. S. Green and M. E. Hacking just south of Moose Jaw on March 24, 1968 (Green, 1969).

Clark's Nutcrackers are restricted during the breeding season to the subalpine coniferous forests of the mountains. According to Godfrey (1966:277), it is a "permanent resident, breeding in southern and central British Columbia (east of the coast but west to Alta Lake) and in the mountains of southwestern Alberta." Following the nesting season, it may wander some distance from the mountains, with records for Alberta being reported from Porcupine Hills, Beaverlodge, and Belvedere (Salt and Wilk, 1958).

Dipper *Cinclus mexicanus*

The Dipper was not recorded by Mitchell (1924), and Potter (1943:70) stated that a Dipper in Saskatchewan "sounds improbable, but there are on the southern slopes of the Cypress Hills several streams, swift-flowing and with gravelly beds that are well suited to this particular bird. No specimens have been secured, but there have been several reports of the Dipper, nearly always in the coldest winter weather, by persons familiar with the bird in the mountains. There is no

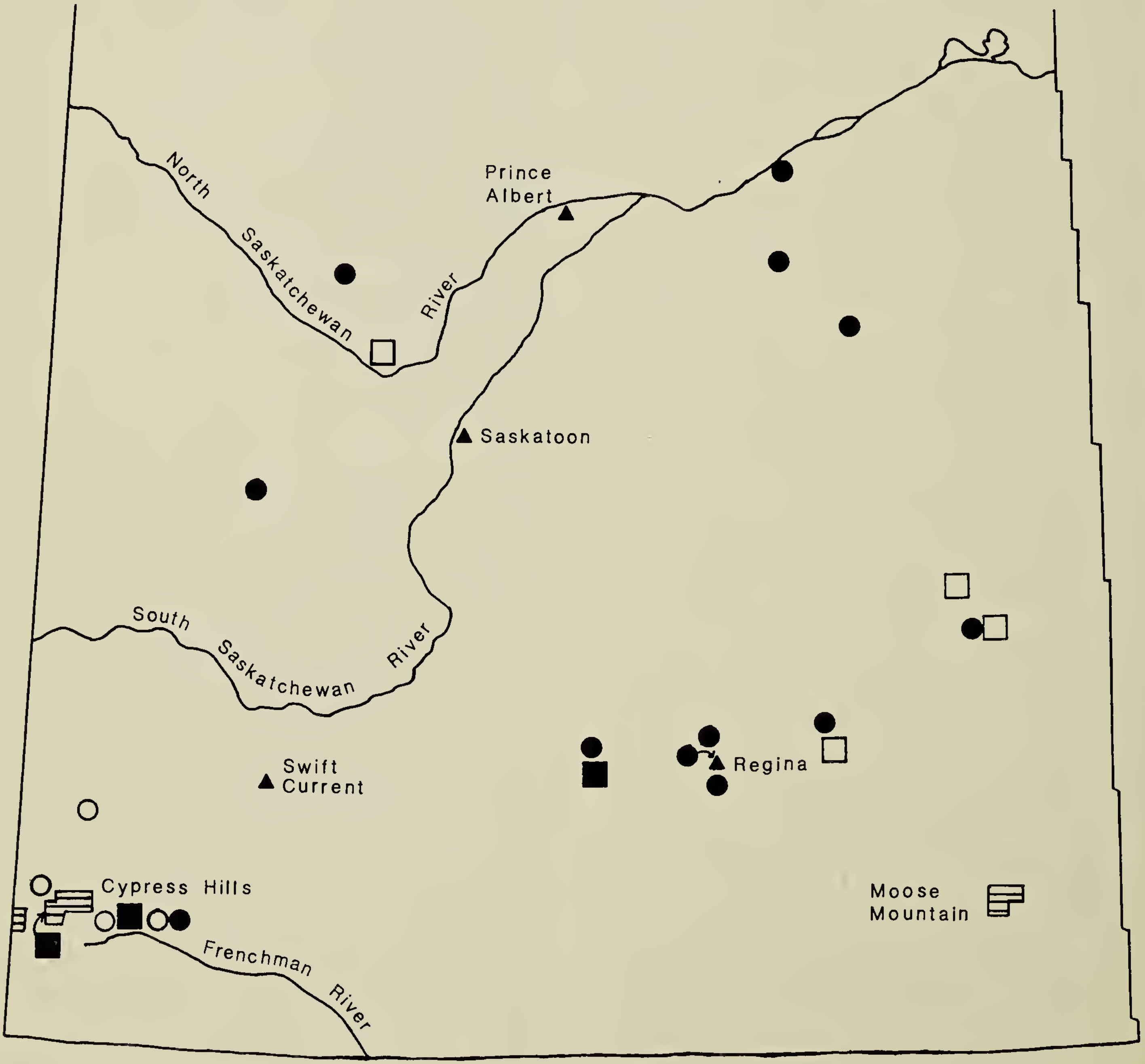

Figure 1. Approximate location of Lewis' Woodpecker (solid circles), Steller's Jay (open squares), Clark's Nutcracker (solid squares), and Dipper (open circles) records in Saskatchewan.

doubt that the Dipper will be taken eventually in this part of Canada."

Although no Dipper specimens have been taken to date in Saskatchewan, additional sight records have been obtained (Figure 1). Houston *et al.* (1958) summarized the details of Potter's Dipper records: two seen by Spencer Pearse on May 22, 1917 at Ravenscrag; one observed on the Pearse ranch at Ravenscrag by Pearse and Neil Pratt (presumably in the 1930's or early 1940's); one seen "popping in and out of the water" at Farewell Creek by Bob Friel (personal correspondence to Potter, February 8, 1941). More recently, R. V. Folker, H. S. Maliepaard, and C. Reid saw a Dipper on the main street of Maple Creek on October 25, 1963 (Folker, 1964) and Elizabeth Cruickshank and Ruth Baker observed one on May 6, 1969 along the Frenchman River, about 10 miles west of Eastend (Cruickshank, 1969). A Dipper was also seen on May 9, 1969 in the Cypress Hills by Sharon Haggerty (Cruickshank, *op. cit.*)

During the breeding season the Dipper occurs commonly throughout the Rocky Mountain regions. Godfrey (1966:286) stated that this species ranges " . . . throughout British Columbia (including Queen Charlotte and Vancouver islands), and southwestern Alberta (Jasper, Banff, and Waterton parks). Winters within most of the breeding range including Yukon." Salt and Wilk (1958:315) indicated that there is a "definite migration from the province of Alberta but a few individuals usually winter near waters kept open by warm springs at Canmore, Banff, Sundre, and Calgary."

Varied Thrush *Ixoreus naevius*

The Varied Thrush appears as a hypothetical species for Saskatchewan in the fourth edition of the *Field check-list of Saskatchewan birds* (1959). This species is further treated as hypothetical by Belcher (1961) who reported an observation of a single bird in Regina on September 9, 1958 but which she was unable to locate again for others to verify. Additions to the check-list of Saskatchewan birds (Nero and Houston, 1963) do not include the Varied Thrush. However, the Varied Thrush is listed as a "straggler" in the fifth edition of the *Field check-list of Saskatchewan birds* (1969).

The sight records of this species in Saskatchewan are shown in Figure 2. The first record appears to be one banded at Burnham on September 27, 1949 by Arthur Ward (1949a). Belcher (1964) recorded three more records for Regina: one seen on September 30, 1961 by Mrs. Elsie Cheesman; on May 22, 1962 Herb Tempel saw one in shrubbery in the Legislative grounds; one was seen also in the Legislative grounds on October 24, 1964 by M. Belcher, the late Lucy Murray, Christine MacDonald, and Charlotte Boissonnault.

A Varied Thrush was seen again in Regina on October 12, 1965 by Frank Brazier and again on the following day by Robert W. Nero, J. W. Gerrard, and M. Belcher, with a further observation (possibly of a second bird) by Belcher on October 23 and by Brazier on October 24, 1965 (Brazier, 1965). In 1966, a single bird was seen on October 1 by F. G. Bard and F. W. Lahrman in Regina (Editor's note, *Blue Jay*, 26:123, 1968). Further records were made in Regina in the fall of 1968: one seen near the Legislative grounds on October 9 by Mr. and Mrs. J. F. MacKay, who showed it to George F. Ledingham and Belcher the next day; a second observation in a different locality was made on November 9 by Ken Johnson and confirmed by Brazier; on November 14 one appeared on the east side of the city where it was first reported by Mrs. D. Tegart and seen on numerous occasions by Tegart and Belcher up to November 28 (Belcher, 1969). Again on September 27, 1969 a Varied Thrush was seen in Regina by Ken Johnson and Brazier (M. Belcher, personal communication).

The only records of the Varied Thrush in Saskatchewan outside Regina, besides the Burnham record, are from Rosetown and Saskatoon. Renaud (1968) reported seeing a single bird near Rosetown on October 9 and 10, 1967; in 1968, he saw one at Rosetown on May 6 and on September 22 (Renaud, 1969). The Varied Thrush was added to the list of Saskatoon birds when one was seen there on October 8, 10, and 11, 1969 (Gollop, 1970) and on September 4, 1970 by J. D. Hogg and September 12, 1970 by S. J. Aldous (J. B. Gollop, personal communication). personal communication).

Godfrey (1966:296) outlined the breeding range of the Varied Thrush as being from "north-central Alaska, northern Yukon, and northwestern MacKenzie south to northwestern California, northern Idaho, and northwestern Montana." It winters from southern British Columbia to northern Baja California. The A.O.U. Check-list (1957:434) defines the status of this species as "casual" in southern Alberta (Belvedere, Edburg, Sullivan Lake, Rosebud) and central Montana (Missoula, Bozeman, Fort Custer). Salt and Wilk (1958:333) described it as breeding in Alberta in the Rocky Mountains from the international boundary to north of Jasper, appearing on the prairies "only as an accidental straggler well off its usual migration route." A northern extension of the known breeding range of the Varied Thrush in Alberta was documented recently by Salt (1966). The first specimen of this species in Manitoba was recorded also recently (Lane *et al*, 1967).

Townsend's Solitaire *Myadestes townsendi*

The earliest record of the Townsend's Solitaire in Saskatchewan appears to be L. B. Potter's at Eastend on April 19, 1908; he reported (1943: 71) that "There are a few further records since, including one at this ranch on April 24, 1941." Mitchell (1924:118) designated the Townsend's Solitaire as "Apparently rare or accidental visitant from the west." Mitchell recorded two records from Saskatchewan: one taken on May 10, 1922 at Lake Johnstone (Old Wives Lake) by C. G. Harrold; one seen at Regina on September 30, 1923 by Mitchell. Other early records are summarized by Godfrey (1950): a male collected by C. F. Holmes at Dollard on April 21, 1931; another male taken just south of Dollard on September 10, 1933 by Holmes.

The Townsend's Solitaire has been recorded in many localities in southern Saskatchewan (Figure 2). It is noted as a "rare straggler" in the Yorkton area on the basis of one seen by Mrs. I. M. Priestly on October 24, 1940 (Houston, 1949:235). It was designated also as a "rare straggler" at Nipawin when M. G. Street observed one on October 15, 1955 (Houston and Street, 1959:146). One was banded on August 25, 1949 at Burnham (Ward, 1949b) and sight records of single birds have been obtained at the following localities: on June 25, 1959 near Baldy Lake (Kuyt, 1959); at Dilke on May 25 and 26, 1959 (J. B. Belcher, 1959); on November 10, 1961 at Fort Qu'Appelle (Callin, 1962); and at Last Mountain Lake on September 24, 1969 (Anweiler, 1970). Eight Saskatoon records have been obtained: one noted on April 10 to 13, 1949 (MacPherson, 1949); single individuals seen on March 28 and July 4, 1966 (Gollop, 1967); singles seen on April 22 and on September 22 to 24, 1967 (Gollop, 1968); and one observed on October 13, 1969 (Gollop, 1970).

Belcher (1961:55) designated this species as a "rare irregular transient" in the Regina area. She summarized the following records from that area: one seen in 1931 by Fred Bradshaw; one seen behind the Technical Collegiate by H. Boyd on April 17, 1934; one was observed on April 21, 1954 by the late Lucy Murray, Betty Strutt, and M. Belcher and was identified on April 24 by J. H. Taylor and seen again on May 5; one was seen on April 23, 1955 by G. F. Ledingham, Murray, and Belcher and again on April 28 by Murray; another was seen near the Experimental Farm on March 30, 1957 by Marion Goudie; and another was seen on April 19, 1958 by Ledingham, and two ("apparently a pair") on April 19, 1958 by Ledingham, F. G. Bard, and Belcher. In 1959, there are records for April 27, 28 and 29, and May 5, "with indications that there

Photo by Fred Lahrman

Townsend's Solitaire

were at least three birds in the area at once."

One and possibly two wintering Townsend's Solitaires were recorded in Regina in 1960 and 1961; one was seen there first on December 3, 1960 and subsequently observed on numerous occasions up to March 28, 1961. An individual was seen also through the first two weeks of April and was believed by Belcher to be the same bird but since it was not marked it is impossible to be sure. These winter observations were summarized in detail by Brazier (1961). Later, on December 24, 1961 a Solitaire was recorded in Regina on the Christmas Census, and this bird was seen again by several observers on January 6, 7 and 20. On May 5 of the same year, Brazier reported an observation of the Townsend's Solitaire near his home in Regina. Two years later, on March 31, 1964 Brazier saw another individual in the same area. On several dates in May, 1965 (May 2, 3, 4 and 6) a Solitaire was again seen by different observers. In 1966, the species was again reported on the Christmas Census, December 26. A fall record for 1967 was noted at the Provincial Correctional Centre several miles east of the city by Al and Betty Binnie—October 17 and 18. Later that year—November 11, 1967 one was seen in the Legislative grounds by Belcher and Christine MacDonald. In late February, 1968 Brazier reported a Solitaire again in the Legislative grounds, and this bird was seen again February 24, March 5 and 17 by other observers. The most recent record at Regina is for November 10, 1969 when Brazier saw a Solitaire in the Legislative grounds (reported to him a week before), and it was probably the same bird that Brazier saw again on two or more occasions up to December 2 when two birds seen in flight were both believed to be of this species (Belcher, personal communication).

According to Godfrey (1966:304), the Townsend's Solitaire breeds in Canada "from southern Yukon (Dawson, Carcross, Lapie River; recorded in summer north to Bern Creek) and southwestern and central-western MacKenzie (mouth of Nahanni River; probably Carcajou River near Canol Road — juvenal specimen August 6, 1958), south through British Columbia (mostly east of the foothills: Jasper, Banff, and Waterton Lakes parks; Gorge Creek)." This species has been recorded during migration on numerous occasions east of the Rocky Mountains in Alberta (Salt and Wilk, 1958) and has been observed and collected in the fall in Manitoba (Harrold, 1923; Lane and Randall, 1970).

Green-tailed Towhee
Chlorura chlorura

The first record of the Green-tailed Towhee from Canada is a male taken at Tregarva, Saskatchewan, on June 6, 1929 by Norman Clarke (B[arnes], 1929; Bradshaw, 1930). This species was seen again also by Clarke at Tregarva on June 28, 1935; the bird seemed quite tame and flitted only a few yards ahead of him on his way to the barn (Rand, 1945). A third record for this province is a female collected at Dollard on May 18, 1944 by Charles F. Holmes (Rand, *op. cit.*). These records are plotted on a map in Figure 2.

A recent record from North Dakota is also of interest; a male Green-tailed Towhee was found on May 13, 1965 in Bismarck by D. Feimer and brought to B. J. Rose who kept it until May 21 when it was released (Rose, 1965).

The Green-tailed Towhee breeds from southwestern and central Oregon, southeastern Washington, southern Idaho, southwestern Montana and northwestern, central and southeastern Wyoming, south through the interior mountains to southern California, southern Nevada, central Arizona and

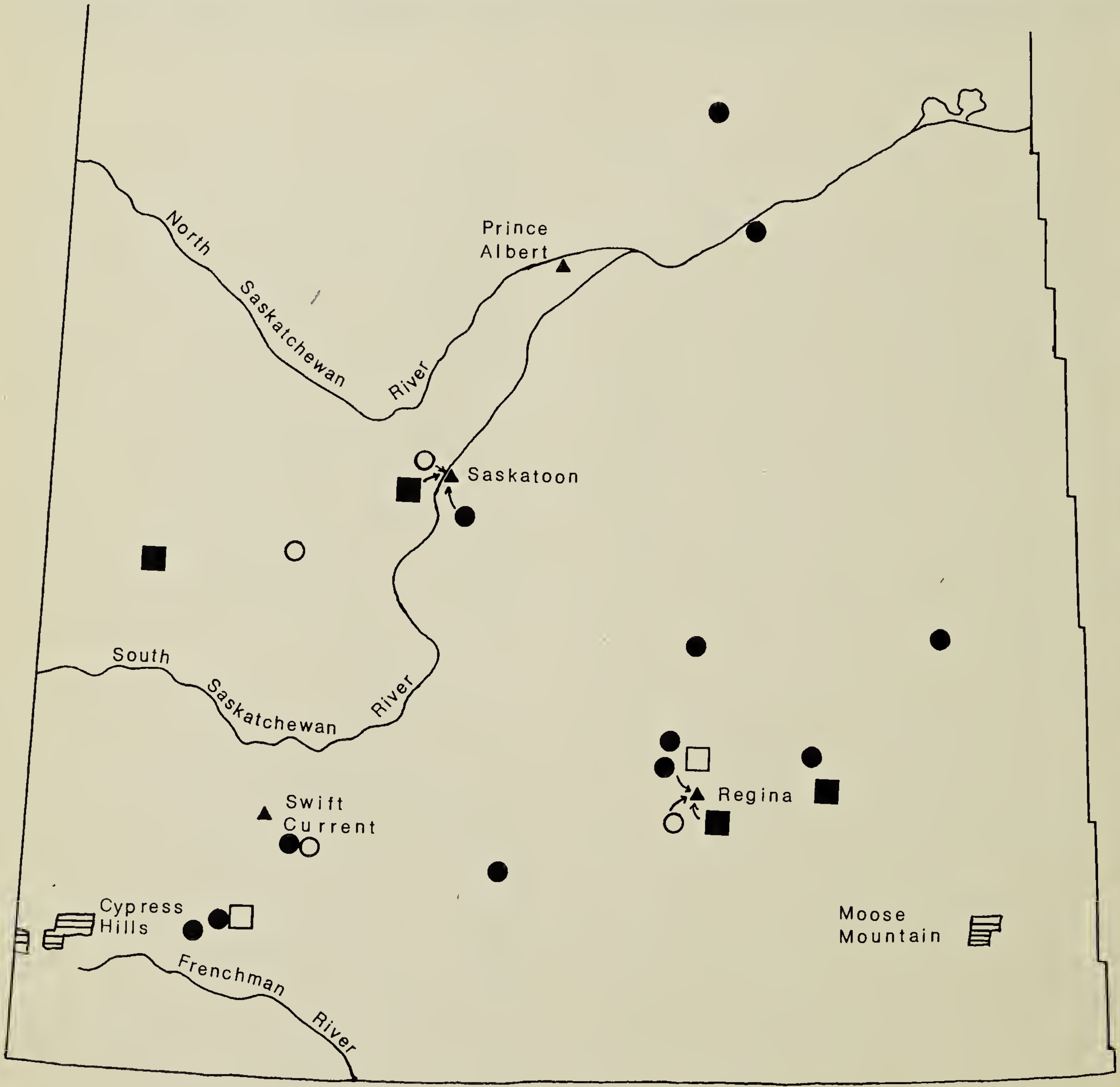

Figure 2. Approximate location of Varied Thrush (open circles), Townsend's Solitaire (solid circles), Green-tailed Towhee (open squares), and Golden-crowned Sparrows (solid squares) records in Saskatchewan.

southern New Mexico. In migration it reaches western Kansas and western Oklahoma. It has been recorded as casual east to Massachusetts, New Jersey, Virginia, South Carolina and Louisiana (A.O.U., 1957).

Golden-crowned Sparrow
Zonotrichia atricapilla

Belcher (1961) lists this species as casual in the Regina area. One was seen with five White-crowned Sparrows (*Z. leucophrys*) at "King's Park" along Boggy Creek east of Regina on May 19, 1956 by Elmer L. Fox, F. H. Brazier, and R. W. Nero, and collected on that date (Nero, 1956). This apparently constitutes the second known record of this species in Saskatchewan; Smith (1914) listed a specimen in the Rocky Mountain Parks Museum at Banff, collected at Indian Head, Saskatchewan, and received from the Geological Survey, Ottawa, 1895.

A second Regina record of this species was obtained when G. F. Ledingham and Maureen Rever saw one on May 27, 1961 (Belcher, 1961).

On May 30, 1956 I found a dead Golden-crowned Sparrow on the ground in the MacKenzie High School yard in Kindersley; the bird was directly beneath a telephone wire and probably hit it while migrating during the night. The specimen was carefully examined and compared to the description of this species presented by Pearson (1936, *Order of Perching Birds*, pp. 36-37) and its identification was made. Unfortunately, at the time I was unfamiliar with methods of preserving birds and the specimen was not saved.

The most recent record of the Golden-crowned Sparrow in Saskatchewan comes from Saskatoon where one was observed on May 18, 1963 (Gollop and Gollop, 1964).

The Saskatchewan records of the Golden-crowned Sparrow are shown in Figure 2.

Godfrey (1966:398) defined the breeding range of this species in Canada from "Yukon (Sheldon Lake) southward to southern British Columbia (Coast Ranges and eastward; Alta Lake, Tonquin Pass), and southwestern Alberta (Jasper and Banff National parks east to Mountain Park)." In Alberta, the only known record away from the mountains is of three birds seen at Red Deer in October, 1939 after a heavy snowfall (Salt and Wilk, 1958).

In migration, Golden-crowned Sparrows are seen throughout southern British Columbia including the Queen Charlotte Islands and Vancouver Island; they winter in small numbers in southwestern British Columbia (Victoria, Vancouver, Okanagan Landing) (Godfrey, 1966).

DISCUSSION

Dispersal is the process whereby an organism is able to spread from its place of origin to another locality. Such dispersal is undertaken by the individual and whatever geographic displacement is achieved will be the result of multiple interactions between the individual and the environment. Udvardy (1969:11) states that "the processes of establishing a new colony of the species are aften so unique and specialized that we must think of them as basic biological characteristics of each species — characteristics which have evolved under strong selection pressure and which adapt each species to respond, throughout time and generations, to the variation of the extent and location of suitable, habitable areas."

In examining the dispersal of animals (birds in the present case) it is necessary to look at the environmental factors which hinder, prevent, or facilitate this dispersal. The species under consideration here normally breed at high altitudes in the coniferous forests or in the montane and high plateau regions of the mountainous areas of western Canada and the United States. Their eastward spread to Saskatchewan, even if ecologically suitable habitats were available, is hindered by the presence of an ecological barrier, the grasslands.

It is interesting to note that several of the Saskatchewan records of Lewis' Woodpecker, all but one of the Clark's Nutcracker, all of the Dippers, several

Townsend's Solitaires, and one Green-tailed Towhee are from the Cypress Hills or the immediate vicinity (Figures 1 and 2). The Cypress Hills region of southwestern Saskatchewan and southeastern Alberta has long interested biologists and geologists. Altitudinal variations in the region and the consequent local variations in climate account for a variety of ecological communities, and consequently there is a diverse bird fauna there. Altitudes of at least 4,500 feet above sea-level are reached in the western part of the hills in Saskatchewan and coniferous forests prevail (Godfrey, 1950).

Birds found in the higher parts of the Cyress Hills are of particular interest. As Godfrey (1950:8) pointed out, the affinities of such species as the Dusky Flycatcher *(Empidonax oberholseri)*, Orange-crowned Warbler *(Vermivora celata orestera)*, Audubon's Warbler *(Dendroica auduboni auduboni)*, Red Crossbill *(Loxia curvirostra)*, Oregon Junco *(Junco oreganus mearnsi)*, and White-crowned Sparrow *(Z. l. oriantha)* are "with the Rocky Mountains to the west and

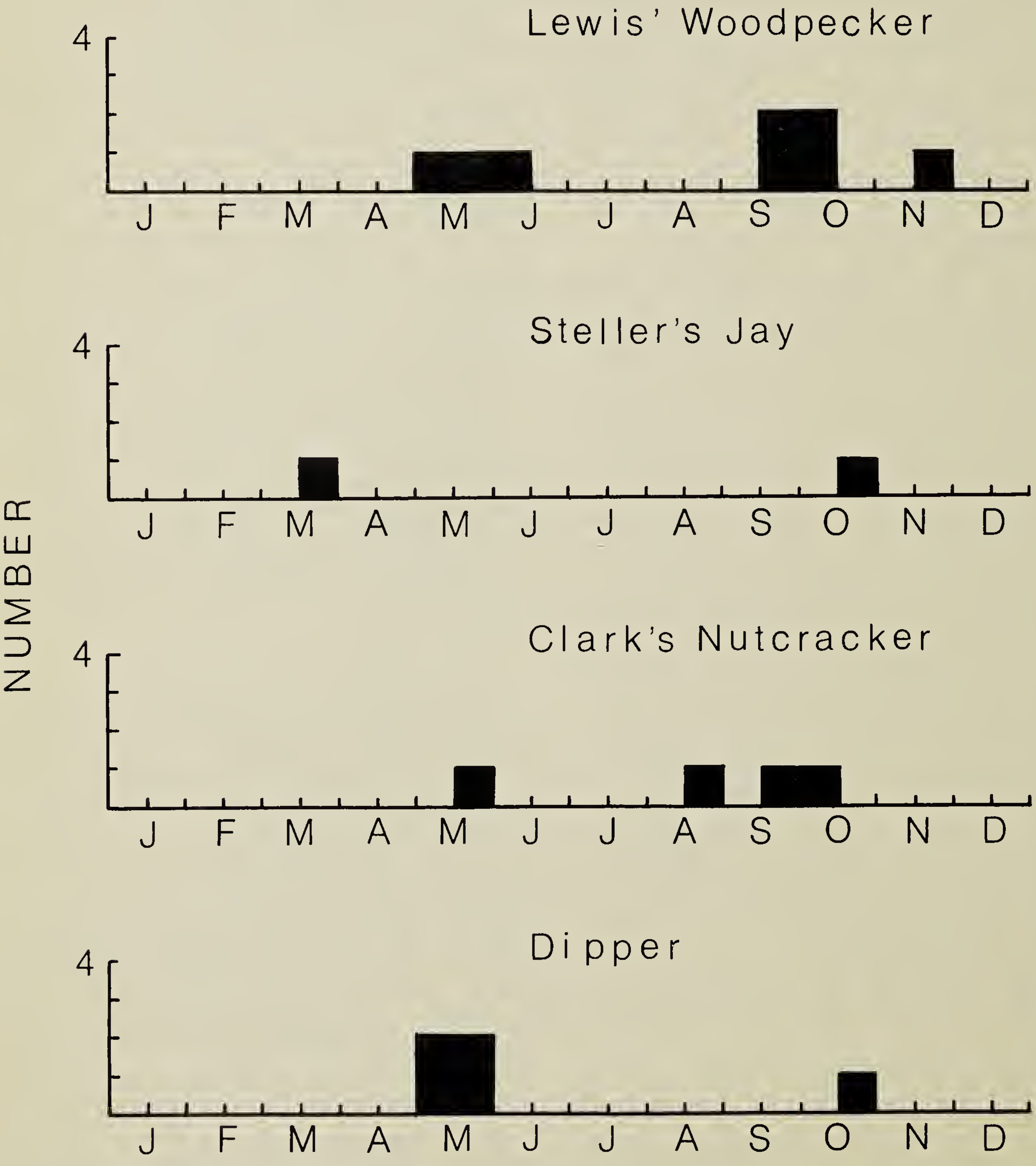

Figure 3. Seasonal patterns of occurrence of Lewis' Woodpecker, Steller's Jay, Clark's Nutcracker, and Dipper in Saskatchewan, in biweekly periods.

their outliers to the south and southwest." The Ruffed Grouse *(Bonasa umbellus)* is not known ever to have occurred there naturally, but was successfully introduced (Potter, 1930). Spruce Grouse *(Canachites canadensis)*, Gray Jays *(Perisoreus canadensis)*, Boreal Chickadees *(Parus hudsonicus)*, and Red Squirrels *(Tamiasciurus hudsonicus)*, so common in the coniferous forests of central and northern Saskatchewan and throughout much of the western mountain region, are not known to occur.

Thus, it is not surprising that some of the species under consideration here have been encountered in such potentially suitable habitat as the Cypress Hills. Indeed, only about 400 miles of "uninhabitable" country must be traversed to reach these hills from the mountains of southwestern Alberta. Despite the apparent suitability of the Cypress Hills to certain mountain species, Steller's Jays have not been recorded there. Salt and Wilk (1958) pointed out that this species frequents coniferous forests at altitudes of 4,000 feet or more during the summer. In fact, the only possible but unconfirmed nesting record of the Steller's Jay in Saskatchewan comes from Saltcoats, where F. Baines observed a pair repeatedly one summer in the 1920's (Houston, 1949).

Although Lewis' Woodpeckers, Clark's Nutcrackers, Dippers, Townsend's Solitaires, and a Green-tailed Towhee have been observed in the Cypress Hills, evidence of breeding there is lacking. Only single individuals have been seen and hence it is possible that successful breeding and subsequent colonization of the Cypress Hills has been prevented by the lack of suitable mates at the proper time of the year. Figures 3 and 4 present the seasonal records of occurrence in Saskatchewan of the eight species under consideration here. As could be expected, the majority of records are during the spring (pre-reproductive period) and fall (post-reproductive period) migratory periods. All of the Green-tailed Towhees and Golden-crowned Sparrows observed to date in Saskatchewan have been seen during the spring migration period (May and June). Although no breeding records of the towhee have been obtained, one of the two Saskatchewan specimens, collected at Tregarva, was a male in breeding condition (Rand, 1945). The Green-tailed Towhee is typically found on wooded mountain sides and among the mesquites in the lowlands of the Cape district of Lower California in winter (Kenyon, 1947). Although present in much of the transition zone, this brush inhabitant is perhaps most characteristic of the Canadian zone, as was graphically illustrated for the Yosemite region by Grinnell and Storer (1924). The range also extends well up into the Hudsonian zone in areas such as the San Francisco Mountains where Jenks (1934:176) found that "these birds inhabit the mountain willow and wild gooseberry thickets on the borders of alpine meadows, from altitudes of 8,300 up to 10,500 feet."

The Golden-crowned Sparrow is also a bird of the Hudsonian zone (Brooks and Swarth, 1925). Rand (1948:6) did not find it in southern Alberta but he indicated its probable occurrence in the mountainous areas: "The alpine grassland above timber-line harbours at least white-tailed ptarmigan and the leucosticte probably belongs here. Other species such as the golden-crowned sparrow and the timber-line sparrow will probably be found here." Such alphine habitat is non-existent in Saskatchewan, even at the highest altitudes in the Cypress Hills; hence, it is unlikely that we will encounter this species nesting in Saskatchewan.

Possibly accounting for the sporadic occurrences of Golden-crowned Sparrows in Saskatchewan during the spring migration period only, is the fact that on the wintering grounds "the golden-crowned sparrows are usually found in mixed flocks with white-crowned sparrows" (Kelly, 1968: 1360). Thus, individual Golden-crowns may stray northward from their wintering grounds in flocks of White-crowned Sparrows, which are common migrants in Saskatchewan; indeed, the specimen collected by Nero (1956) was a lone individual in a flock of White-crowns.

Many authors (Skinner, 1922; Packard, 1945; others) have reported the altitudinal distribution of the Dipper as extending from the Upper Sonoran or Transition Life Zones up to or near the timber-line. However, they have been found even in the Lower Sonoran Life Zone in Arizona (Hargrave, 1939). During the summer in western Montana, they are most commonly found in the Upper Transition and Canadian Life Zones, where they breed (Saunders, 1921).

The presence of the Dipper in the

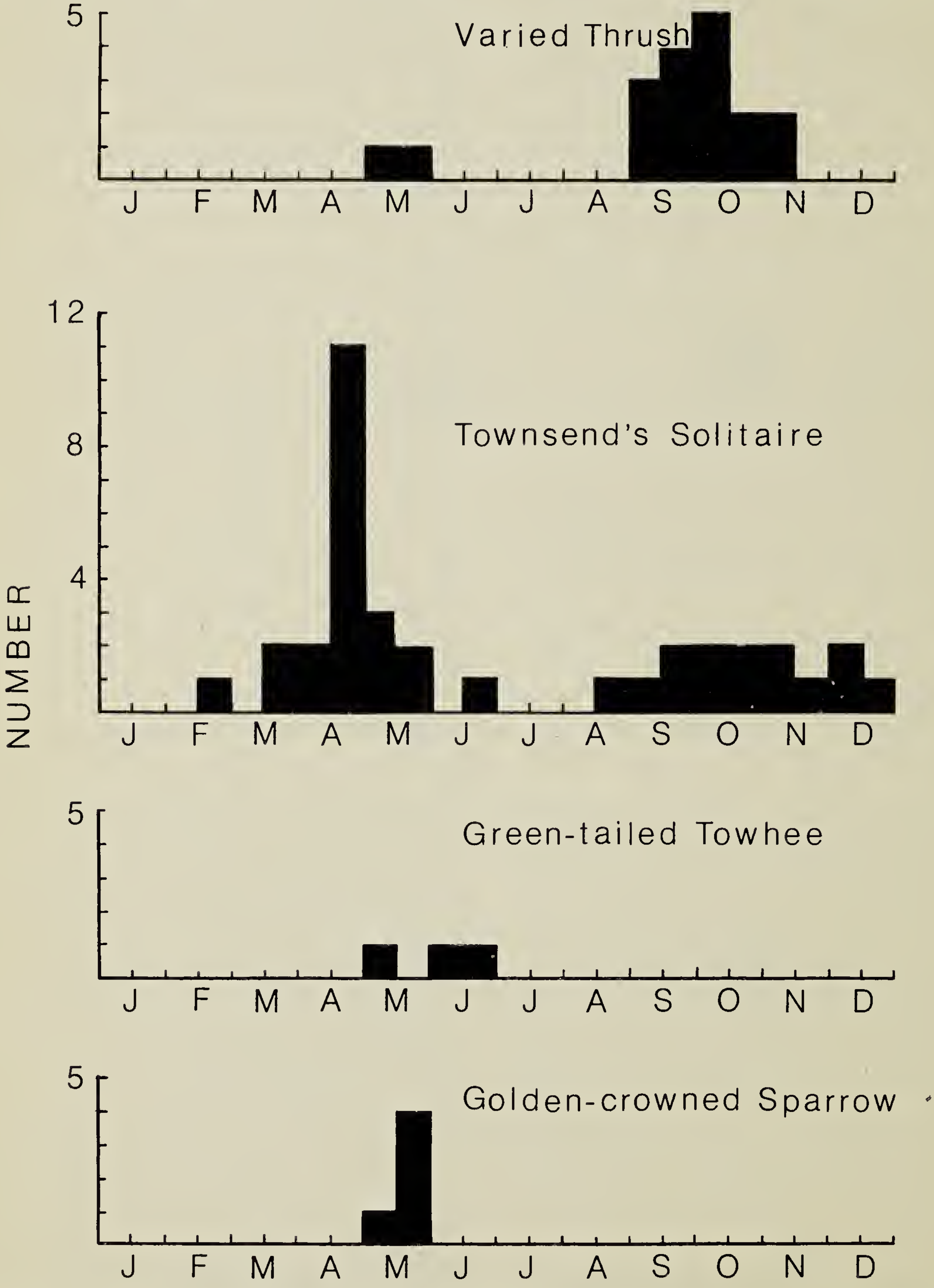

Figure 4. Seasonal patterns of occurrence of Varied Thrush, Townsend's Solitaire, Green-tailed Towhee, and Golden-crowned Sparrow in Saskatchewan, in bi-weekly periods. Where the same bird is suspected of being seen over an extended period, only the date when it was first seen is recorded.

Cypress Hills region of Saskatchewan is somewhat of an enigma. Dippers are rarely seen over land; Bakus (1959) considered flights over a 10-foot and 30-foot stretch of land to be noteworthy in this respect. Skinner (1922) saw one Dipper flying across a quarter-mile stretch between two streams. Thus, disregarding the unlikely possibility of a relict population of Dippers in these hills, it appears that Dippers have flown over long stretches of land to reach them. Streams originating in the Cypress Hills form the Frenchman River which flows southeast into the Milk River in northeastern Montana; since the Milk River originates in the Rocky Mountains in northwestern Montana, it would be possible for a Dipper to follow these waterways to the Cypress Hills. However, no records have been obtained along the Milk River or more than a few miles from the source of the Frenchman River. More probably Dippers have dispersed to the Cypress Hills by means of high wind; in fact, Folker (1964:5) speculated that this species' presence in Maple Creek on October 25, 1963 was due to "Gale force winds which were prevalent in the area during the better part of the week, including the day of our observation, [which he said] could account for the unusual appearance of a Dipper on a town street."

From Figure 4, it is seen that 16 out of 18 or about 88 percent of the observations of Varied Thrushes in Saskatchewan were made in the fall. Bent (1949:96) provided some late fall departure dates that compare interestingly with many of the Saskatchewan records: Alberta — Edberg, October 10; Montana —— Fortine, October 24; Idaho — Priest River, November 8. More recently, this species has been recorded from Brandon, Manitoba, from November 28 to December 28, 1965 (Lane *et al.*, 1967); Cushing, Minnesota, on November 22, 1965 (Isaken, 1966); and Morris, Minnesota, from December 5 to 7, 1965 (Strubbe, 1966). All seven casual records of Varied Thrushes from several eastern localities presented by Bent (1949), were obtained also in the fall.

Bent (1949:96) referred to migrant Varied Thrushes found east of their normal range being "usually in company with robins"; the Varied Thrush in Regina on October 24, 1964 was also apparently in company with a flock of Robins (Belcher, 1964). It is thus possible that Varied Thrushes reach Saskatchewan by straying with Robins which are common migrants and residents there.

The majority (about 61 percent) of Townsend's Solitaires in Saskatchewan, on the other hand, have been seen in the spring (Figure 4), although it has been observed there during most months. All of the casual records documented by Bent (1949) from eastern North America were obtained in the fall and winter months. The presence of the Solitaire in Regina in winter (Brazier, 1961), although unusual, is not inconsistent with the habits of this species (Bent, 1949).

ACKNOWLEDGMENTS

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NOON TRIPS FOR BIRDS

by **Mark Abley,** 1002 King Street, Saskatoon

Many bird watchers have very little time in which to pursue their favourite hobby. What can, in fact, be accomplished if one has only an hour or so to go "birding"? I hope that this article will show that a great deal of useful knowledge can be gained and a great deal of pleasure derived from regular bird-watching excursions, no matter how brief.

In the past three years, I have accompanied Mr. Frank Roy on noontime trips to watch birds. These trips were taken in spring, during the midday break at City Park Collegiate, where I was a student and Mr. Roy a teacher. We were usually accompanied by Dr. Ron Bremner, and sometimes by one or two other persons as well. City Park Collegiate is located fairly close to downtown Saskatoon, so several minutes were taken up leaving and re-entering the city. As a result, we had only an hour at the most in which we could actually watch birds. It is worth noting that not once in the three years was I late for afternoon classes — despite the fact that five minutes before the bell rang we were quite often outside city limits!

Despite the proximity of City Park Collegiate to the city centre, there are many areas within reach which are excellent for birding. Kinsmen, Kiwanis and Cosmopolitan Parks were occasionally visited (generally at the peak of warbler migration), as was the Woodlawn Cemetery. All these places are inside the city, and reasonably near the school. But much of our time was spent outside the city, at such spots as the sloughs north of the Saskatoon airport, the Hudson Bay chain of sloughs north and east of Saskatoon, and especially at one four-acre tree-rimmed slough on 51st Street North, about one-half mile east of Highway 5.

A typical trip would consist of a quick jaunt round the King Street area (excellent for small migrants); a brief visit to the South Saskatchewan River; an extended stop at the tree slough on 51st Street; and a trip either to the Airport sloughs or to the large sloughs northeast of Saskatoon. Clearly, we could go no farther without returning late and incurring the wrath of the school administration.

Such trips are excellent for a novice bird watcher, as I was in 1969. Our noon excursions trained me to spot birds quickly, identify them quickly, and recognize songs and call-notes with a fair degree of accuracy. Furthermore, the trips provided me with a splendid picture of the passage of migrating birds; visits to many of the same sites each day give one a precise sense of timing in regard to the arrival and departure of each species. Our first dowitchers for the season were sighted May 6, 1969; May 6, 1970; and May 3, 1971. While few species were as consistent as the dowitcher, the "first spring" and "last spring" dates for many birds were remarkably similar during each of the three years.

The trips were also useful from the standpoint of gathering interesting records. A full list of birds seen during the three years is found at the end of this article; but some of the more unusual species were: Cooper's Hawk, Pigeon Hawk, Knot, Ruddy Turnstone, Ruff, Buff-breasted Sandpiper, Hudsonian Godwit, Olive-sided Flycatcher, Brown Creeper, Magnolia Warbler, Wilson's Warbler, Baird's Sparrow, and LeConte's Sparrow. We recorded new early arrival dates in the Saskatoon region for species as diverse as the Red-necked Grebe, and the Chestnut-collared Longspur. We saw all five species of grebes; 15 kinds of ducks; seven species of hawks; 25 species of shorebirds; 12 kinds of warblers; and 22 species of finches.

With regard to number of species observed in a single day, the highest totals are 60 (May 16, 1969) and 61 (May 20, 1970). At the opposite extreme, diligent searching on April 21,

Photo by Frank Roy

Tree slough, Saskatoon, May, 1971

1970, turned up only 12 species. The highlight of the three years would undoubtedly be the trip taken on May 19, 1970, when just one hour of birding produced such rarities as a Pigeon Hawk, a pair of Buff-breasted Sandpipers, and the Ruff sighted for the first time in Saskatoon. This find was reported by Frank Roy in the March, 1971 *Blue Jay.*

If it could be said that our trips had a specific focus, it would be the tree slough on 51st Street. It is remarkable that this slough has managed to remain reasonably well-preserved and unpolluted in spite of the steady encroachment of civilization. A gravel road, once almost unused but now quite busy, runs through the slough, cutting it in two parts. The slough is surrounded by trees, mostly willow and aspen. This accounts in part for the amazing number and variety of birds it still attracts. On its south side is a farmhouse; to the east lies a gypsum-producing plant; on the other two sides, farmland. A total of 120 different species have been recorded here through the years. It attracts both waterfowl (every species of duck commonly found in the Saskatoon district has been recorded here) and small land birds. In May of this year (1971), over 60 Myrtle Warblers—the largest flock yet seen in Saskatoon—were continually flitting in and out of the willows. Several unusual species were recorded there from 1964-1966 (but not in the last three years), including the Broad-winged Hawk, Long-eared Owl, Black-throated Green Warbler, Bay-breasted Warbler, and Swamp Sparrow. Many of the trips of those years, however, were taken in the fall, whereas the trips on which I accompanied Mr. Roy (for scholastic as well as ornithological reasons) all took place in the spring.

Our noon bird-watching trips were both enjoyable and worthwhile. If one is a bird watcher and is willing to forego the pleasure of an unhurried hot lunch, such trips can produce much pleasure and many birds. The total of 144 species recorded in the past three years shows that not even an extremely limited time span during a poor time of day can prevent birders on regular trips from uncovering unexpected and interesting birds.

I would like to thank Ron Bremner for his comments, and Frank Roy for his advice and photographs.

LIST OF BIRD SPECIES RECORDED DURING NOON TRIPS (1969-1971): Red-necked Grebe, Horned Grebe, Eared Grebe, Western Grebe, Pied-billed Grebe, American Bittern, Whistling Swan, Mallard, Gadwall, Pintail, Green-winged Teal, Blue-winged Teal, American Widgeon, Shoveler. Redhead, Ring-necked Duck, Canvasback, Lesser Scaup, Common Goldeneye, Bufflehead, Ruddy Duck, Common Merganser, Cooper's Hawk, Red-tailed Hawk, Swainson's Hawk, Rough-legged Hawk, Marsh Hawk, Pigeon Hawk, Sparrow Hawk, Gray Partridge. Sandhill Crane, Sora, American Coot, Killdeer, Golden Plover, Black-bellied Plover, Ruddy Turnstone, Common Snipe, Spotted Sandpiper, Solitary Sandpiper, Willet, Lesser Yellowlegs, Knot, Ruff, Pectoral Sandpiper, White-rumped Sandpiper, Baird's Sandpiper, Least Sandpiper, Short-billed Dowitcher, Long-billed Dowituher, Stilt Sandpiper, Semipalmated Sandpiper, Buff-breasted Sandpiper, Marbled Godwit, Hudsonian Godwit, American Avocet, Wilson's Phalarope, Northern Phalarope, California Gull, Ring-billed Gull, Franklin's Gull, Common Tern, Black Tern, Rock Dove, Mourning Dove, Long-eared Owl, Common Nighthawk, Belted Kingfisher, Yellow-shafted Flicker, Yellow - bellied Sapsucker, Downy Woodpecker, Eastern Kingbird, Western Kingbird, Eastern Phoebe, Traill's Flycatcher, Least Flycatcher, Olive-sided Flycatcher, Horned Lark, Tree Swallow, Bank Swallow, Barn Swallow, Black-billed Magpie, Common Crow, Red-breasted Nuthatch, Brown Creeper, House Wren, Catbird, Brown Thrasher, Robin, Hermit Thrush, Swainson's Thrush, Gray-cheeked Thrush, Veery, Ruby-crowned Kinglet, Water Pipit, Sprague's pipit, Cedar Waxwing, Loggerhead Shrike, Starling, Red-eyed Vireo, Warbling Vireo, Black and-white Warbler, Tennessee Warbler, Orange-crowned Warbler, Yellow Warbler, Magnolia Warbler, Myrtle Warbler, Blackpoll Warbler, Palm Warbler, Ovenbird, Northern Waterthrush, Wilson's Warbler, American Redstart House Sparrow, Western Meadowlark, Yellow-headed Blackbird, Red-winged Blackbird, Baltimore Oriole, Rusty Blackbird. Brewer's Blackbird, Common Grackle, Brown-headed Cowbird, Rose-breasted Grosbeak, Purple Finch, Pine Siskin, American Goldfinch, Rufous-sided Towhee, Savannah Sparrow, Baird's Sparrow, LeConte's Sparrow, Vesper Sparrow. Slate-colored Junco, Tree Sparrow, Chipping Sparrow, Clay-colored Sparrow, Harris' Sparrow, White-crowned Sparrow, White-throated Sparrow, Fox Sparrow, Lincoln's Sparrow, Song Sparrow, Lapland Longspur, Chestnut-collared Longspur, Snow Bunting.

THE GARGANEY, A NEW BIRD FOR MANITOBA

by **Rudolf F. Koes,** 348 Oakwood Avenue, Winnipeg 13

On May 23, 1971, my wife and I decided to join Winnipeg birdwatchers for the annual outing to St. Ambroise on the south shore of Lake Manitoba, approximately 60 miles northwest of Winnipeg.

Having arrived at the beach, we stopped to look at some waders and ducks feeding in a shallow, marshy pond on the south side of the wooded ridge along the lake. Several ducks were present, among them Blue-winged Teal, Pintail and Mallard. One other species of duck was preesnt, but it was so familiar I paid little attention to it. This was an adult drake Garganey *(Anas querquedula)*, the size of a Blue-winged Teal and a duck common in my native Holland. After a moment, however, I made a quick check in our *Birds of North America* (Robbins, *et al.*, 1966) and was surprised to find that the bird was not even listed for this continent.

Delacour (1956:163) gives the following description of the male Garganey in breeding plumage:

" . . . a black crown and throat, broad, long white supercilia joining on the nape, and the rest of the head and neck brownish chestnut streaked with white; mantle, back and tail blackish brown with pale borders to the feathers; wings generally as in the other species of the group, the long, lanceolate, ornamental scapulars glossy black with a broad central white line, the wing coverts pale bluish grey, the mirror light green between two wide white bands; breast light brown laced with black; rest of underparts white, finely waved with black on the sides and spotted on the vent and undertail coverts. Iris brown; bill and legs leaden grey."

After observing the Garganey for about half an hour through 10 X 50 binoculars, we decided to alert the rest of the group. Luckily, several prominent ornithologists were present, among them Dr. Bob Nero and Herb Copland. All were able to see the bird several times. It was observed by close to a dozen persons from approximately 12:30 p.m. to 2:00 p.m., through binoculars (10 X 50, 7 X 50, 8 X 35, etc.) and a 25-power telescope. The minimal viewing distance was about 100 feet. At the time the temperature was between 60° and 65°F. and it was mostly cloudy with little wind.

Dr. Bob Nero made the following

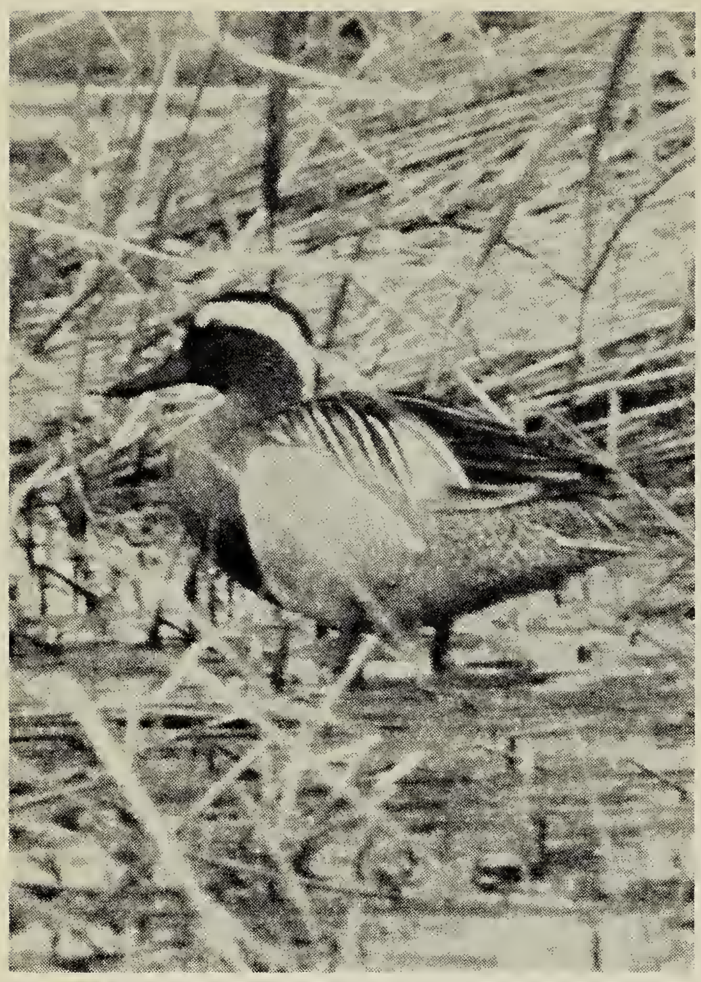

Photo by Vere Hunt Scott

Garganey

notes on the behaviour of the Garganey which was in constant company of a pair of Blue-winged Teal:

"The relationship of the Garganey to a pair of Blue-winged Teal with which it was associating was particularly interesting. It was attached to the female Blue-wing and repeatedly kept itself between the female and the drake Blue-wing. It also constantly followed the female Blue-wing. On a few occasions it made aggressive dashes and other signs of intolerance towards the male Blue-wing.

"The female Blue-wing, however, paid little attention to the Garganey, and several times she showed incitement display directed towards the male Blue-wing, bobbing her head in typical incitement behaviour and eliciting similar behavior from the male Blue-wing. The latter showed a surprising tolerance to the Garganey, permitting it to come between itself and its mate with little or no signs of aggression. And it also permitted the Garganey to swim beside its mate; other teal, however, at least male Blue-wings, were vigorously routed, sometimes even distant birds receiving this aggressive attention from the drake Blue-wing.

"In summary, the Garganey had a strong attachment to the hen of a mated (i.e., pair bond developed) pair of Blue-winged Teal, both of which were highly tolerant of the Garganey.

"On one flight, the Garganey was in the lead. This group consisted of the Garganey, the pair of Blue-winged Teal, and one or two other drake Blue-wings."

At approximately 2:00 p.m. the bird flew away—still in company of the Bluewings — and was not seen until about 5:00 p.m. At that time Mr. Vere Scott was able to take a number of black and white photographs with a 400 mm. telephoto lens.

The distribution of the Garganey, according to Delacour (p. 164) is as follows:

"Breeds in the British Isles and Iceland (rare), farther east, north to about 64° in Sweden, central Finland, northern Russia (Karelia, Sovovetski Island, Archangel), western Siberia (Berezov on the Ob); eastern Siberia (Yenisei 60°, Lena 62°, northern shore of Lake Baikal, Amur River), Kamachatka and the Commander Islands, sporadic farther north; south to Spain (Quadalquivir, Marismas), southern France (Camargue), central Italy, Albania, Bulgaria, Crimea, Transcaucasia, Turkestan to Altai, Semepalatinsk, Tarbagatai, Mongolia and Manchuria; occasionally in Sardinia, Tunisia, Cyprus and Naxos. Winters in southern Europe, Africa, south to the Congo and Nyasaland, the Seychelles, southern Asia, Malaysia, the Philippines, Celebes, Moluccas, New Guinea; stragglers in Australia."

Fisher (1967: plate 14) notes that the bird is highly migratory.

Although the species is not listed by Godfrey (1966) there is one previous record for Canada. On June 22, 23 and 24, 1961, an adult drake Garganey was seen near Two Hills, Alberta, by Lawson G. Sugden and Ronald H. Mackey

(Sugden, 1963). Sugden assumed that this bird had escaped captivity and migrated north from some western U.S. zoo.

Because of the possibility that the Manitoba bird had escaped from a zoo or private collection I contacted Mr. J. C. Shaver of the Canadian Wildlife Service in Edmonton, who advised me (pers. corres., June 7, 1971) that he was not aware of any person or zoo in western Canada in possession of live Garganeys.

Mr. Chandler, S. Robbins, Chief of Migratory Non-Game Bird Studies in the U.S.A. (pers. corres., July 29, 1971) notes as follows:

"Mr. Glen Smart of our Endangered Species Program estimates that there are somewhere in the vicinity of 200 Garganeys in captivity in North America. Some waterfowl escape into the wild every year and losses occasionally are very heavy (as during the hurricane season along the south Atlantic coast). . . . many of the birds are lost without their absence being detected by the owner, and failure to secure documentation of escapes does not mean that escapes into the wild have not occurred. There have been a few reports of Garganeys in the wild in the Middle Atlantic States, and it is quite likely that some of these birds migrate to Manitoba. We have been forced to assume that all such birds have been in captivity."

Although it is not possible to show that the Garganey was a true immigrant to this continent, it is quite conceivable considering the fact that its breeding range in two places almost touches North America and that the Garganey is highly migratory.

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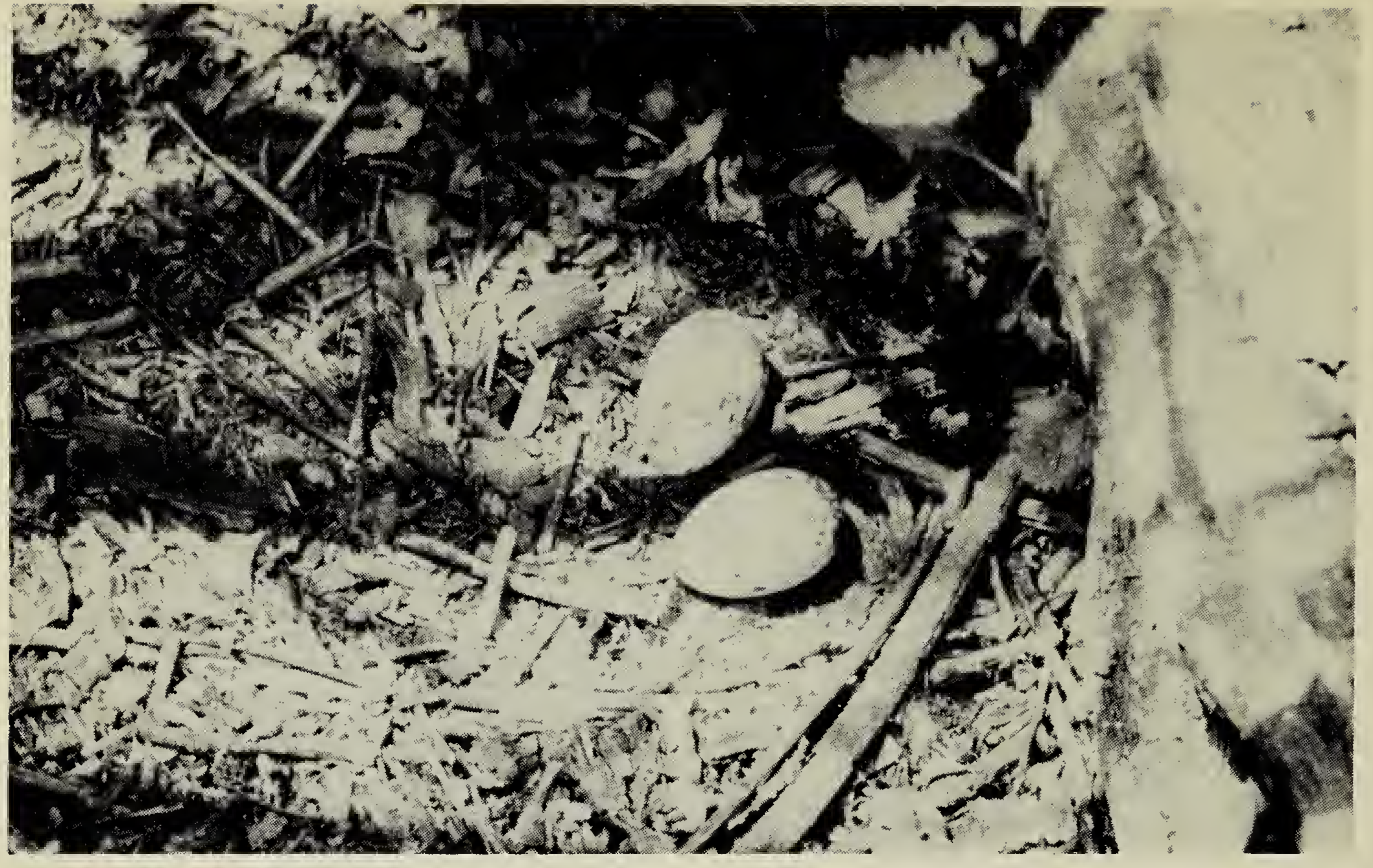
FIRST RECORDED TURKEY VULTURE NEST IN RIDING MOUNTAIN NATIONAL PARK, MANITOBA

by **E. W. Andrusiak, D. C. Harbottle** and **K. R. Whaley**
Riding Mountain National Park, Wasagaming, Manitoba

The Turkey Vulture *(Cathartes aura)* is listed as an "occasional casual visitor" in Riding Mountain National Park by Taverner and Sutton (1940:4). Soper (1953:15) did not observe this species during his faunal investigations in the park from 1940 to 1946. Godfrey (1953:8) did not mention any Riding Mountain records although observations from Duck Mountain and Dauphin, to the north of the park, are listed. Godfrey (1966: 85) also reported nests on the Duck Mountain, on Elk Island in Lake Winnipeg, and at Long Lake north of Whiteshell Provincial Park. Long (1971) reported 12 known nests from Saskatchewan, including Madge Lake on the Duck Mountain. Blood (1964: 204) listed seven observations between June 15 and October 20, 1962 and three observations between May 4 and September 17, 1963, including several pairs, at Riding Mountain. Since the latter observations there have been numerous sightings of Turkey Vultures in Riding Mountain National Park by the warden and naturalist staff.

On June 2, 1971 a nest was located on a fairly large island at the north end of Baldy Lake. Baldy Lake is 16 miles north of Oakburn, Manitoba and 2 miles within the park boundary. A vulture was first sighted from a fire tower which overlooks the lake at its south end. It circled the lake and disappeared. Upon investigation of the main islands in the lake this or another vulture was flushed from the nest.



Turkey Vulture nest on island in Baldy Lake, 1971

The nest site was located on a gently sloping hill among willows, ferns and white birches. A wet sedge meadow was located at the base of the slope. The two large greyish eggs, speckled with brown, were situated on a crude bed of decaying wood chips which had been torn from a nearby rotting limb. The nest was protected on three sides by overhanging dead branches. It was accessible through a single tunnel-like east entrance. During observation of the nest both adults circled overhead.

We extend special thanks to Park Warden H. L. Jennings who first noticed the vultures at Baldy Lake on May 20, 1971 and the Chief Naturalist R. J. Walker for assistance in preparing this article.

Editor's Note: Herb Copland, Manitoba Museum of Man and Nature, reports that Nest Records Cards record a Turkey Vulture nest found by R. W. Sutton on May 12, 1957, at High Lake, Manitoba. The nest containing two eggs was in a cavity formed by large blocks of granite on a cliff on an island. The nest, deeply lined with leaves, was at the back of the cavity where the two entrances met at right angles. The location of the nest in 300 yards from the Ontario boundary of Manitoba.

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NEST RECORD CARDS

Please send 1971 Prairie Nest Record Cards in to Mr. H. W. R. Copland, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg 2, Manitoba, as soon as possible, so that the 1971 summary can be prepared.

RED-TAILED HAWK NESTING SUCCESS, 1971

By **Wayne C. Harris,** Raymore, Saskatchewan

The nesting success of the Red-tailed Hawk *(Buteo jamaicensis)* in an area around Raymore, Saskatchewan decreased tremendously in 1971. Only 37.5 percent of the nests under observation were successful, and the number of young fledged from these successful nests also dropped considerably compared to previous years (see Table 1). Only one of six successful nests this year raised two young, as compared to 1970 when four nests fledged three young each, 12 nests raised two young, and two raised one young. Although the sample is small for 1966 to 1969, there were only three nests throughout the four years which raised one young only.

The nests counted as being active were those which contained incubating females from late April to the end of May. None of the nests in question this year was climbed to check contents until late June. All of the nests in the years 1966 to 1970 were climbed while eggs were still being incubated; thus, desertion due to human disturbance can be ruled out for 1971 (except for one nest which showed signs of someone attempting to cut down the tree).

Fifteen nests located south of Kelliher by Ian Lochtre also showed poor success. Of these nests, five failed, three raised two young to banding size, and seven raised one to this age. This represents an average of 1.30 young per active nest.

Photo by Wayne Gemmell

Also, two nests which were found by Bob Robinson northwest of Simpson failed.

A high incidence of Red-tailed Hawk nest failure and low fledgling success was noted by Dr. Stuart Houston (*Blue Jay*, 24:143) in 1966 in the Saskatoon area; five nests each raised one young, and six nests were unsuccessful. In that year, Great Horned Owl *(Bubo virginianus)* nest success was high, a situation which was not evident in the Raymore area in 1971 when five out of 12 nests failed.

A factor which may have accounted for this decline in success of Red-tails is the heavy rain which occurred throughout the first two weeks of June, for during this period young birds would still be susceptible to the cool, damp weather. Prey populations did not appear to have decreased in 1971 relative to previous years; this was verified by food remains in nests.

Table 1. Summary of nesting data.

Year	Total number of nests	Number successful	Number of young fledged	Average no. of young fledged per successful nest
1966	4	4	9	2.25
1967	6	6	12	2.00
1968	6	6	11	1.81
1969	7	6	13	2.16
1970	22	18	38*	2.11
1971	16	6	7	1.17

* Count for young when ¾ grown (number of young fledged unknown)

SOME NOTEWORTHY RECORDS OF COWBIRD PARASITISM IN SOUTHERN ALBERTA

by **Norbert G. Kondla,** 4320 Bowness Road, and **Harold W. Pinel,**
1017 - 19 Avenue N.W., Calgary

The observations contained herein were made from 1967 to 1971 in southern Alberta. Included are records of parasitism of species which are apparently not frequently parasitized, and some interesting records of species which are frequently parasitized by the Brown-headed Cowbird *(Molothrus ater)* (Friedmann. Host relations of the parasitic cowbirds. U.S. Natl. Mus. Bull. No. 233. 1963).

Dusky Flycatcher
(Empidonax oberholseri)

Kondla observed a nest of this species containing three flycatcher eggs and one cowbird egg on June 22, 1968 at Norman Lake. The nest was six feet up in the crotch of a large willow (*Salix* sp.) in a grove of aspen poplar *(Populus tremuloides)* about 50 feet from Norman Lake. Of six Dusky Flycatcher nests observed in the area, this is the only instance of parasitism. Friedmann (1963) did not list any records of parasitism of this species.

Horned Lark *(Eremophila alpestris)*

Pinel discovered a lark nest on June 6, 1970 at Little Bow Lake. The nest was beside dry cattle dung on heavily grazed native grassland and contained three lark eggs and one cowbird egg. There is only one previous record for Alberta as noted by Friedmann (1963).

Swainson's Thrush
(Hylocichla ustulata)

On June 19, 1968 Kondla found a nest containing four thrush eggs and four cowbird eggs at Norman Lake. One of the thrush eggs had a small puncture in the shell. The nest was three feet up in a willow in a mixed stand of aspen poplar and white spruce *(Picea glauca)*. The next year in the same place the same observer noted a thrush nest four feet up in a small white spruce containing three thrush eggs and three cowbird eggs. Four previous records of parasitism of this species in Alberta have been noted by Friedmann (1963).

Yellow Warbler
(Dendroica petechia)

Friedmann says that this is one of the most frequently parasitized species. Our observations are in full support of this. One interesting nest, however, was found by Pinel on June 21, 1970 at Calgary in which a pair of warblers was incubating a single cowbird egg. On June 24 the warblers were still incubating the egg, but on June 28 the nest was empty.

Red-winged Blackbird
(Agelaius phoeniceus)

Friedmann (1963) noted that in Maryland the Redwing was almost invariably parasitized in the early clutches and that later, when other hosts became available, cowbirds rarely bothered blackbirds. Pinel observed a late record of parasitism by finding a nest containing four Redwing eggs and one cowbird egg on June 27, 1970 at Traver's Reservoir. The nest, which was one of six, was situated in cattails *(Typha latifolia)* about 10 feet from shore. Friedmann reported that Roberts is 1932 in Minnesota found that nests of Redwings in marshes were not parasitized, but nests in bushes near marshes were parasitized regularly. Friedmann also quotes Nickell as stating that solitary nests or nests at the periphery of the colony were more parasitized than those nests in the midst of the colony. Nickell attributed this fact to the combined aggressiveness and vigilance of the blackbirds. Except for the observation by Pinel that was mentioned above, our findings are in agreement with Roberts and Nickell. On May 31, 1970 Pinel checked 26 Redwing nests in a marsh at the north end of Namaka Lake and found no parasitized nests. On the same day, Kondla and Pinel found 35 nests in a marsh at Langdon, none of which was parasitized.

Brewer's Blackbird
(Euphagus cyanocephalus)

Friedmann states that this species is frequently imposed upon by cowbirds in Alberta and Montana. This is in full agreement with our observations as outlined in Tables 1 and 2. All of the nests reported at Calgary were part of a colony nesting in a cemetery on the eastern outskirts of Calgary on Highway 1A. Out of 17 nests in 1970, nine contained cowbird eggs, or, in other words, 53 percent of the Brewer's Blackbird nests were parasitized. In 1971 only six blackbird nests were checked at the same locality, and four of these proved to be parasitized. The four cowbird eggs found in nest 15 (Table I) varied considerably in size and markings indicating that different female cowbirds deposited eggs in the nest. Besides the three blackbird eggs found in nest 17 (Table I), there was also a blackbird egg found on the ground under the nest.

Table 2 summarizes the observations of Kondla at Dinosaur Provincial Park, and differs from the preceding table in that the nests were visited more than once.

The nests at Dinosaur Provincial Park were within an area of two acres and there was no noticeable difference in appearance between the cowbird eggs. On June 18 the cowbird eggs

Table 1. Contents of Brewer's Blackbird nests at Calgary, Alberta in 1970 and 1971.

Nest No.	Date	Eggs in nest Blackbird	Cowbird	Nest description	Observers
1	May 20, 1970	4	0	5 ft up in a blue spruce	H. Pinel
2	May 20, 1970	4	0	3 ft. up in a caragana bush	H. Pinel
3	May 20, 1970	1	0	9 ft. up in crotch of blue spruce	H. Pinel
4	May 20, 1970	3	1	4 ft. up in crotch of blue spruce	H. Pinel
5	May 20, 1970	1	0	5 ft. up in blue spruce	H. Pinel
6	May 20, 1970	2	1	4 ft. up in caragana bush	H. Pinel
7	May 20, 1970	2	0	4 ft. up in blue spruce	H. Pinel
8	May 23, 1970	6	1	5 ft. up in crotch of blue spruce	H. Pinel
9	May 23, 1970	5	1	3 ft. up on horizontal limb of blue spruce	H. Pinel
10	May 23, 1970	4	0	4 ft. up on limb of blue spruce	H. Pinel
11	May 23, 1970	2	1	3 ft. up on limb of blue spruce	H. Pinel
12	May 30, 1970	5	1	2 ft. up in caragana bush	H. Pinel
13	May 30, 1970	3	1	4 ft. up on limb of blue spruce	H. Pinel
14	May 30, 1970	4	0	4 ft. up in crotch of blue spruce	H. Pinel
15	May 30, 1970	3	4	1 ft. up in Cotoneaster hedge	H. Pinel
16	May 30, 1970	3	0	3 ft. up in caragana bush	H. Pinel
17	May 30, 1970	3	2	3 ft. up in blue spruce	H. Pinel
18	May 23, 1971	5	1	3 ft. up in blue spruce	H. Pinel
19	May 23, 1971	5	1	6 ft. up in blue spruce	H. Pinel and C. Wallis
20	May 23, 1971	1	0	4 ft. up in caragana bush	H. Pinel and C. Wallis
21	May 23, 1971	5	0	3 ft. up in blue spruce	H. Pinel and C. Wallis
22	May 23, 1971	5	1	2 ft. up in Mugho pine	H. Pinel and C. Wallis
23	May 23, 1971	6	1	4 ft. up in caragana bush	H. Pinel and C. Wallis

remaining in nests 7 and 8 were cold; a subsequent check showed that incubation appeared to be about one-half complete. The disappearance of eggs and young in some nests could be due to the activities of house cats and bullsnakes *(Pituophis melanoleucus)*.

Savannah Sparrow
(Passerculus sandwichensis)

According to Friedmann (1963), the Savannah Sparrow is a very infrequent victim of the Brown-headed Cowbird and there are only three old records of parasitism for Alberta. A recent incident was noted by Kondla on May 28, 1970 at Eagle Lake. The nest, which was a depression on the ground amongst dense grass, contained three sparrow eggs and one cowbird egg. Two of the sparrow eggs each exhibited several small punctures.

Slate-colored Junco
(Junco hyemalis)

Pinel discovered a nest at Norman Lake on June 18, 1970 containing two junco eggs and one cowbird egg. The nest was on the ground along the margin of a brush pile and soil mound in damp, lush vegetation. The eggs were on the verge of hatching which indicates the possibility of successful parasitism. This species seems to be an infrequent host as Friedmann (1963) lists only 18 instances of parasitism.

Table 2. Contents of Brewer's Blackbird nests at Dinosaur Provincial Park, Alberta.

		Contents of nest				
		Blackbird		Cowbird		
Nest No.	Date	young	eggs	young	eggs	Description of nest
1	May 19, 1971		1			4 ft. above ground in *Shepherdia argentea*
	May 25, 1971		4			
	May 31, 1971		4			
	June 7, 1971	3	1			
	June 18, 1971	1				
2	May 19, 1971		4			5 ft. above ground in *Shepherdia argentea*
	May 31, 1971		2			
	June 7, 1971	2				
	June 18, 1971	0				
3	May 18, 1971		1			3 ft. above ground in *Shepherdia argentea*
	May 19, 1971		2			
	May 25, 1971		2		1	
	May 31, 1971		0		0	
4	May 19, 1971		4			3 ft. off ground in chokecherry bush
	May 31, 1971		2		2	
	June 7, 1971		2		2	
	June 18, 1971	2 unidentified young				
5	May 20, 1971		5			4 ft. off ground in chokecherry bush
	May 31, 1971		0			
6	May 31, 1971		4			3 ft. above ground in *Shepherdia argentea*
	June 7, 1971	3	1			
	June 18, 1971	1				
7	June 7, 1971	4	1		1	2 ft. above ground in *Artemisia cana*
	June 18, 1971	0	0		1	
8	May 31, 1971		3		2	2 ft. above ground in *Shepherdia argentea*
	June 7, 1971	3		1	1	
	June 18, 1971	0		0	1	
9	June 7, 1971	4				5½ ft. above ground in *Shepherdia argentea*
	June 18, 1971	3				

Chipping Sparrow
(Spizella passerina)

Although the Chipping Sparrow is a common victim, Friedmann (1963) stated that he knew of no records of nest desertion due to the presence of cowbird eggs. On May 29, 1969 we discovered a nest of this species containing one sparrow egg and one cowbird egg. A visit to the same nest on June 5 revealed only the cowbird egg in the nest and it was cold. Kondla found three cowbird eggs in a Chipping Sparrow nest which contained no sparrow eggs at Norman Lake on June 19, 1968. The nest was one foot up in a white spruce sapling. The eggs were cold when found.

Chestnut-collared Longspur
(Calcarius ornatus)

Friedmann (1963) states that observations of parasitism in nests of this species have been reported regularly only from North Dakota, and that most of these were in the 1890's. One of the most recent observations is again from North Dakota on June 19, 1933 by George C. Whithey. Kondla found a Chestnut-collared Longspur nest on May 27, 1967 at Lake Newell which contained two longspur eggs and two cowbird eggs. This appears to be one of the most recent observations and the first record from Alberta.

SOME BREEDING ASPECTS OF HERRING GULLS AT KAWINAW LAKE, MANITOBA

by **Kees Vermeer,** Canadian Wildlife Service, Edmonton

Incidental to a study of egg laying chronology and food habits of Herring Gulls *(Larus argentatus)* during May and June, 1971 on two small islands in Kawinaw Lake, 52°50'N; 99°29'W, Manitoba, data were collected on egg size, egg laying intervals, incubation periods, clutch size and hatching success. Little is known about these subjects for inland populations of this species in North America.

Egg measurements were taken of the first (I egg), second (II egg) and third eggs (III egg) laid in 39 clutches and are compared with those of Herring Gull eggs measured in Europe (Table 1). The third egg was on the average smaller than the first two eggs laid, a common phenomenon in gulls (Vermeer, 1969). Egg dimensions at Kawinaw Lake appear similar to those in Denmark and Norway, but dissimilar to those in England. According to Barth (1967), who extensively measured body parts of Herring Gulls in northern Europe, the British population is a separate form of that in Fennoscandia. No body measurements of Herring Gulls were made at Kawinaw Lake.

Egg laying intervals and incubation periods were determined for clutches

Table 1. Mean length and width of eggs I, II and III in mm in Herring Gulls.

Authority	Location	No. of clutches measured	Mean length of eggs in mm I	II	III	Mean width of eggs in mm I	II	III
Harris, 1964	England	100	68.7	68.7	66.5	48.3	48.4	46.3
Paludan, 1951	Denmark	57	72.4	72.1	69.2	50.6	50.5	49.2
Barth, 1967	North Norway	59	73.7	73.5	71.4	50.6	50.7	49.5
Barth, 1967	Middle Norway	76	72.8	72.3	70.2	49.4	49.7	48.3
Barth, 1967	South Norway	18	73.2	72.2	71.2	50.2	50.5	49.5
This study, 1971	Canada	39*	72.7	73.7	71.9	50.1	50.5	49.3

* Standard errors for the mean length and width of the I, II and III eggs were 0.6, 0.3, 0.5, 0.3, 0.7 and 0.4 respectively.

Table 2. Egg-laying intervals between successive eggs in clutches and incubation periods* of Herring Gulls, 1971.

Egg-laying intervals, days	1	2	3	Incubation period, days	24	25	26	27
No. of laying intervals	1	43	18	No. of incub't'n periods	1	7	24	1
Mean ± SE of laying interval		2.3 ± 0.6		Mean ± SE incubation period			25.8 ± 0.1	

* Incubation periods are the intervals between laying and hatching of the third egg.

Table 3. Comparison of hatching success between Herring Gull clutches initiated during the first and second half of the egg-laying season.

Time of clutch initiation	No. clutches	No. eggs	Hatched No. eggs	Hatched %
First half of season	107	321	226	70.4
Second half of season	54	151	94	62.2
Total	161	472	330	69.9

Table 4. Comparison of hatching success between different clutch sizes of Herring Gulls in the second half of the egg laying season.

Clutch size	No. clutches	No. eggs	No. eggs Hatched	(%)
3	44	132	89	67.4
2 and 1	10	19	5	26.3

which were visited daily during laying and hatching. The mean laying interval of 62 known intervals was 2.3 days and the mean incubation period of 33 known periods was 25.8 days (Table 2). The mean incubation period and standard error for 67 known periods for a Herring Gull population in Denmark was 27± 0.08 days, which is significantly different.

The mean clutch size for 102 clutches initiated to May 17, the mean date for clutch initiation, was 3.00. That for 82 clutches started after May 17 was 2.74±0.06 (SE). Coulson (1966) found that female Black-legged Kittiwakes *(Rissa tridactyla)* with greater breeding experience, and which retained their mate of the previous breeding season, laid on the average earlier and had larger clutches. Perhaps the same is true for Herring Gulls.

The hatching success of 161 Herring Gull clutches was 69.9 percent (Table 3). The difference in hatching success between clutches initiated during the first and second half of the season was not significant ($p=0.08$). Table 4 relates hatching success to clutch size for clutches initiated during the second half of the egg laying season. Smaller clutches produced significantly fewer chicks than larger clutches (p 0.05).

Of 142 eggs which did not hatch, 97 were addled, 37 disappeared or were preyed upon, and eight chicks died during hatching. As no predators other than Herring Gulls were observed near the nesting islands it is thought that those gulls were responsible for missings eggs and eggs which were preyed upon.

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ELEVENTH ANNUAL NESTBOX REPORT OF THE BRANDON JUNIOR BIRDERS

by **J. Lane,** 1701 Lorne Avenue and **D. Knock,** 260 20th Street, Brandon

During 1971 our club reached the 3000 mark in nestboxes built and set out, but we estimate 200 of these are no longer habitable. Our total nestline mileage exceeds 700 miles, all but 60 miles being in southwest Manitoba, the balance in Saskatchewan. We plan to have another 200 boxes or more built and set out by next spring.

Our club has several notable items to report from the 1971 season. First of all, our farthest-west record for nesting Eastern Bluebirds was extended from Virden, Manitoba, to just west of Whitewood, Saskatchewan, 70 miles west of the previous record. Our total nestings of bluebirds exceeded 600 for the first time. During the 1970 season we had found three cases of Tree Swallows' nests with the egg clutches including two or more bluebird eggs; all three nestings were failures, as was a fourth example found in 1971, but a fifth instance, with just one bluebird egg present in the clutch, proved successful, a Mountain Bluebird fledging along with the swallows' own brood. Red Squirrels occupied no less than ten of our nestboxes, a big jump from the one a year previously reported; in some cases they did some renovating, such as enlarging the nesthole.

Examples of cross-breeding continue to appear on our nestlines. In 1970 we listed two instances of male Eastern Bluebirds and female Mountain Bluebirds raising families, the first in a nestbox just north of Kenton, Manitoba, the other east of Carberry, Manitoba. In 1971 three additional cases of cross-breeding were found: a male hybrid X Eastern; male Mountain X female Eastern; and a male Eastern X female Mountain. These three matings produced one, four, and three young respectively. A total of six young from these nests are now with Dr. D. Krieg at State University, New Paltz, New York; all six have undergone their post-juvenile molt, and all appear to be hybrids.

In 1970 we reported the banding of over 1600 bluebirds of the two species; in 1971 the total bandings were 2632, of which 450 were Eastern Bluebirds. Our total nestings for the year follow:

Mountain Bluebird (first-broods)	508
Eastern Bluebird (first-brood)	135
Cross-bred nestings	3
Tree Swallows (estimate)	1400
House Wrens	38
Starlings	12
Deer Mice	45
Red Squirrels	10

ANNUAL REPORT OF THE INDIAN HEAD BLUEBIRD TRAIL PROJECT, 1971

by **Lorne Scott,** Indian Head

An additional 200 nest boxes were set out this spring on the Indian Head Bluebird Trail project, bringing the total number of houses set out since the project began in 1963 to 1200. One hundred of these houses were set out south of Grenfell along highway #47, going as far south as #16, then west to Glenavon, and north along grid roads to Wolseley. Another trail of 50 houses was established from Balgonie to Fort Qu'Appelle along highway #10. A third trail was started along the grid road running north of White City, east of Regina.

In past years Tree Swallows occupied most of the new houses and Mountain Bluebirds did not increase in numbers on new trails until the second and third year. This year was no exception; Tree Swallows occupied about 90% of the new houses set out. Only eight houses were occupied by Mountain Bluebirds along the new trails.

About 800 young Mountain Bluebirds were raised from approximately 200 nests this spring. This is an increase of about 45 nests from last year. Banding was continued under a permit from the Canadian Wildlife Service. Of the 700 Mountain Bluebirds banded, 64 were adult females, two were adult males, and the rest were nestlings. Of the 1,000 Mountain Bluebirds banded in 1969 and 1970, 17 adult females were recaught this spring while nesting.

Tree Swallows occupied about 450 nests and produced over 2000 young. This is an increase of 125 nests over last year. Twenty-eight adult females were recaught this year out of the 1450 Tree Swallows banded in 1969 and 1970. Another 1450 Tree Swallows were banded this year, of which 180 were adults, largely famales.

Unfortunately House Sparrows seem to be on the increase, especially on trails which have been established for two or three years. Several Tree Swallows and Mountain Bluebirds were found dead in the bottom of nest boxes beneath sparrow nests. In fact, one nest box contained two dead adult Tree Swallows and one adult male Mountain Bluebird under a sparrow nest.

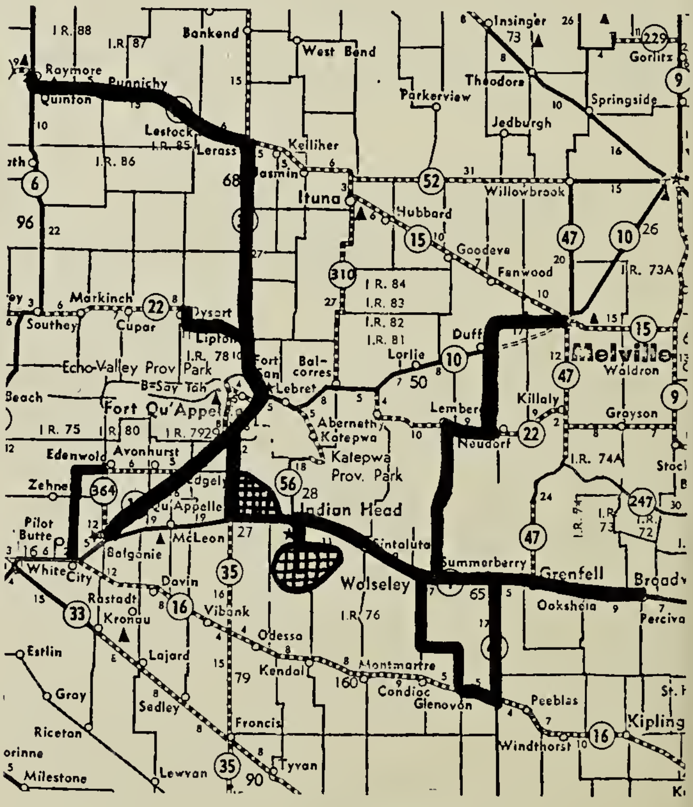
Perhaps to show more clearly the takeover of nest boxes by House Sparrows, we can use the bluebird trail from Wolseley to Melville for an example. This trail contained 100 houses when set up in 1969. The following chart illustrates the number of nests used by the species.

Year	1969	1970	1971
Tree Swallows	73	41	36
Mountain Bluebird	12	15	17
Eastern Bluebird	1	0	0
House Sparrow	8	36	38
Total houses destroyed	6	8	9

Several interesting observations were again made this year. One of these was a male Eastern Bluebird assisting a female Mountain Bluebird in raising her family. This was reported in the *Blue Jay* (29:126-127). One Tree Swallow nest contained 11 eggs; all the eggs hatched and the 11 young were successfully fledged. Another Tree Swallow nest was checked in early July just before the young were able to fly. The nest contained three normally colored young and one almost complete albino. This dilute albino was all white below and a very light tan color on the top of its head, back and wings. It appeared to be as healthy and strong as the other three young Tree Swallows.

The nest boxes are visited at least four times a year. The first visit is made in mid-May; on this trip the number of bluebird and Tree Swallow nests can be determined. About 30% of the adult female bluebirds are caught while incubating their eggs and banded. The second trip is made in early June. The young bluebirds are old enough to band, and about 50% of the adult Tree Swallows are caught on their nests and banded. The third trip is carried out in late June or early July to band the young Tree Swallows. The final trip takes place in the fall to clean out the old nests and repair the houses. Each complete trip takes from two to three days, and covers a distance of about 500 miles.

The following map shows the present location of the Indian Head Bluebird Trails.



Indian Head Bluebird Trails

1971 BIRD HOUSE REPORT, SASKATOON JUNIOR NATURAL HISTORY SOCIETY

by **Joan E. Besant,** and **David V. Houston,** Saskatoon

Our main project for the past three years has been the construction and maintenance of a bluebird-house trail. It extends from Delisle to Raymore and consists of 412 houses spaced about one-third of a mile apart. Our houses are part of a 500-mile trail that has been established in conjunction with Dr. Jack Lane of Brandon and Lorne Scott of Indian Head, extending from Delisle to Macgregor, Manitoba.

Only the 208 houses in the study area to be covered by the forthcoming *Birds of Saskatoon* could be visited regularly in June and July of this year.

We were encouraged by the further increase of Mountain Bluebirds from eight to 12 pairs and Tree Swallows from 130 to 172 pairs. Above all, our occupancy rate has increased to approximately 91%. (Table 1). However, we were discouraged by the increase of unwanted House Sparrows from 11 to 17 pairs; it seems they prefer aged and weathered houses.

This fall we are diversifying our program and have put up four Goldeneye duck nesting boxes and nine Great Horned Owl nesting platforms. We hope to carry this project further, with more outdoor activity, as well as more talks and films during our meetings.

TABLE 1.

	1969	1970	1971
Total Houses	207	(368)	(412)
In study area	(115)	182	208
Tree Swallows	128	130	172
Mountain Bluebirds	3	8	12
House Sparrows ..	1	11	17
House Wrens	2	0	0
Total houses occupied	134	145*	191**
Intact but empty	11	15	12
Damaged, empty	62	22	5
Occupancy rate......	65%	80%	91%

*By 149 pairs, in 1970. Four houses were used by two species in one year—two were Tree Swallow- Mountain Bluebird and two were Tree Swallow-House Sparrow.

**By 201 pairs in 1971. Ten houses were used by two species in one year—five were Tree Swallow - Mountain Bluebird and five were Tree Swallow-House Sparrow.

Totals are calculated on underlined numbers, not on numbers in parentheses, since repeated checks are now restricted to houses within 60 miles of Saskatoon.

ENDANGERED SPECIES

In the June, 1971, Game Bird Breeders, Aviculturists, Zoologists and Conservationists' *Gazette*, John Perry, Assistant Director of the National Zoological Park in Washington, D.C. reports as follows: The Bengal Tiger is now listed as endangered and all Indian States have banned hunting for five years. Costa Rica has established a national park to allow undisturbed nesting of the endangered Green Turtle. A new national park in India encompassing most of the remaining range of the fewer than 80 Indian Rhinoceroses will attempt to save the rhinos from extinction. The U.S.S.R. has banned all hunting of the Polar Bear and attempts are being made to restrict hunting in Alaska and Canada. In the Philippines attempts are being made to save the Monkey-eating Eagle which is now one of the rarest birds with a total population of only about 40 individuals.

LOOKING AHEAD

At the SNHS Annual Meeting plans were made for next summer's field meet and for the 1972 Annual Meeting. Since then, the Board of Directors has established provisional dates for these important society activities:

Summer Meeting at North Battleford, June 9-10-11.

Annual Meeting at Yorkton, October 13-14 (tentative date).

WASCANA WATERFOWL PARK

by **Margaret Belcher,** Regina

Two official ceremonies held this summer in the Wascana Waterfowl Park helped to focus attention on this unique area in the heart of the city of Regina. The first of these events took place on June 28 when the new display ponds were opened. The short afternoon ceremony was presided over by P. J. Moran, Chairman of the Waterfowl Park Committee which has advised the Wascana Centre in the development of the waterfowl park. Guest speakers were the Honourable D. V. Heald, Chairman of the Wascana Centre Authority, who officially opened the project, and Miss Carma Halldorson, a Grade 10 student from Campbell Collegiate, whose interest in the park was first inspired by a visit to it with her school class when she was in Grade 7.

The park was described as a unique oasis in a metropolitan area, and indeed visitors who stood within the fenced area of the display ponds looking across the marsh to the city could hear the sounds of a living marsh around them as frogs croaked and calling waterbirds flew over. Suddenly amid the familiar marsh voices of the two species of blackbirds, and the cries of Killdeer, Avocets, Lesser Yellowlegs, and Spotted Sandpiper overhead, strange goose talk was heard. One recognized the call of the White-fronted Geese, which now share one of the ponds with the less common Ross' Goose, while in a second pond a pair of Pelicans provided another unusual sight, since these birds rarely visit the Wascana Marsh.

A month later, on July 30, a second ceremony was held in the park, on the occasion of the dedication of a handsome cairn and bench installed on the east side of the marsh near the native prairie area, to acknowledge the donation of $8,000 made in 1970 to the Park by Ducks Unlimited (Canada). Mr. Moran again presided over the

Leader-Post Photo

White Pelican in Wascana Waterfowl Park display pond.

Photo by Fred Lahrman

Canada Geese returning to Wascana Waterfowl Park.

ceremony, and greetings were given by Mayor Walker, vice-chairman of the Wascana Centre Authority, the Honourable Walter Smishek, representing the Government of Saskatchewan, Dr. Ken Martin, former president of Ducks Unlimited (Canada), and Ernie Paynter, who has been a member of the Waterfowl Park Committee since its inception. In these brief speeches, the theme was reiterated of the importance of protecting our natural environment, and the generous donation of Ducks Unlimited toward the preservation of the native grassland area in the park was cited as a splendid example of practical support for this concept. Appropriately, a short tour of the native prairie was arranged to follow the dedication ceremony, with Ron Boychuk, park naturalist, pointing out familiar grassland plants and discussing with interested guests the problem created by encroaching cultivated species like brome grass or even native species like snowberry which increases under the pressure of use. The difficulty of maintaining intact such a small area of native grassland became apparent to the visitors, but it was also clear that the effort to preserve it was worthwhile in terms of the respect for natural areas inculcated in those who come to know the Wascana Waterfowl Park.

The inscription on the plaque unveiled at the cairn during the dedication ceremony tells briefly the history of the park:

> "Created originally in the early 1880's as an artificial lake for a permanent water supply for local residents, Wascana Lake was set aside in 1913 as a game preserve and was created a bird sanctuary in 1956. Banding of ducks in the marsh was carried out by Ducks Unlimited in the early 1940's and Canada Geese were introduced in 1956. Commencing in 1960 young geese were transplanted to selected areas in Saskatchewan and Manitoba. The sanctuary became part of the Wascana Centre in 1962.
>
> Development of this prairie habitat to provide much needed waterfowl nesting cover has been made possible through funds provided by Ducks Unlimited (Canada).
> The Wascana Centre, the Saskatchewan Department of Natural Resources, the University of Saskatchewan and the citizens of Regina and Southern Saskatchewan have given continuing support and financial assistance to develop and maintain the Wascana Waterfowl Park as a home for prairie wildlife and for the public to enjoy."

SOME RECENT SASKATCHEWAN RACCOON RECORDS

by **Wayne C. Harris,** Raymore

The range of the Raccoon *(Procyon lotor)* was until recently thought to extend only to the southern portion of the province. Harvey Beck (*A guide to Saskatchewan mammals*, S. N. H. S. Spec. Publ. No. 1, 1958) gives records from Estevan, Regina, Carlyle, Disley, Kelster, Meadow Lake, Moose Mountain, North Portal, Vantage and Wauchope. The Meadow Lake report is the only record north of the Qu'Appelle River Valley, thus leaving a gap of approximately 300 miles in which there are no records.

The following records partially fill this gap:

Norman B. Beug, Raymore, in the fall of 1967 (thought to have been September although the exact date is unknown) sighted a Raccoon eight miles south and one mile east of Raymore as it ran through the headlights of a truck.

Dave Gray, Wildlife Research Branch, Department of Natural Resources, Saskatoon, found a road-killed Raccoon 10 miles south of Saskatoon on highway No. 11 in June 1969. This individual was a male and was thought to have been an adult.

On September 5, 1969, at 8:35 p.m., J. B. Gollop and Hugh Boyd, Canadian Wildlife Service, Saskatoon, saw a single Raccoon crossing a road two miles east of Strehlow (approximately 15 miles SSE of Saskatoon).

The most recent record is from an area seven and one-half miles west of Semans. On September 12, 1971 the writer picked up two individuals which had been hit by vehicles on highway No. 15. The two animals were within 25 yards of one another on the road. One of these was a female, the other a male; the closeness of the kills suggests that they were probably a pair.

DIE-OFF OF AMBYSTOMA TIGRINUM IN A PRAIRIE POND

by **E. A. Driver,** Canadian Wildlife Service, Saskatoon

One hundred and fifty-two dead larval tiger salamanders, *Ambystoma tigrinum*, from 9 to 13 centimeters (approximately four to five inches) in length were counted in a 0.19 hectare (0.5 acre) pond near Floral, Saskatchewan (52°02′N, 106°31′W), in mid-afternoon on July 10, 1970. No dead adults were observed. Several live larvae were seen on the morning of July 10.

The pond had a maximum depth of 62 centimeters (24 inches) and was moderately fresh, having a total dissolved solid concentration of 520 parts per million. The water was slightly brown in colour (50 Hazen units) and weakly alkaline, pH 7.6. No dissolved oxygen readings were taken on July 10. Emergent vegetation consisted of hard stem bulrush *(Scirpus acutus)*, whitetop *(Scolochloa festucacea)*, water parsnip *(Sium suave)* and spike rush *(Eleocharis)*. Aquatic macrophytes included ivy-leaf duckweed *(Lemna trisulca)*, water milfoil *(Myriophyllum exalbescens)* and water starwort *(Callitriche)*. Neither green nor blue-green algae bloom occurred in this pond in 1970.

The counts included all salamanders on the substrate from the pond edge to a depth of 30 centimeters (one foot). This area represents 35% of the surface area of the pond. Assuming a uniform distribution of larval salamanders, an estimate of the total population was 434 or 0.23 salamanders per square meter of substrate.

Three specimens were submitted to

Dr. G. Wobeser, Department of Veterinary Pathology, University of Saskatchewan, Saskatoon, for examination. Initial examination conducted July 10 was followed by histopathological examination and the final report was submitted to me January 13, 1971. It stated that the tiger salamanders died from anoxia, lack of oxygen. The diagnosis supported my field observations of larval salamanders in a stressed condition surfacing for air on the morning of July 10.

Although dissolved oxygen was not measured, an oxygen deficiency probably occurred. For several days preceding the die-off, light winds, six to sixteen kilometers per hour (four to ten mph) and high water temperatures, 20 to 24°C, were recorded. These conditions tend to limit dissolved oxygen levels because oxygen mixing is minimal at low wind speeds and the solubility of oxygen in water drops with an increase in water temperature. These factors, coupled with the oxygen uptake of water milfoil and water starwort at night, provide conditions conducive to a serious reduction in oxygen levels.

Dead adults of *A. tigrinum* were noted at several other ponds within 1.6 kilometers (one mile) of the above mentioned pond the following week.

I wish to thank C. A. Matthews, Canadian Wildlife Service, and D. W. Matheson for their assistance with the field count.

A CHECK-LIST OF ALGAE IN WASCANA LAKE

by **M. V. S. Raju, D. Young** and **J. E. Hines,** Biology Department
University of Saskatchewan, Regina

It is well known that freshwater lakes undergo eutrophication, an aging process brought about by the interactions of a variety of physico-chemical and biological factors. Eutrophic lakes are characterized by a richness in nutrients and aquatic organisms such as algae; indeed in an extremely eutrophied lake one or a few species of algae may multiply to such a degree that virtually all other organisms are excluded. Such unusual abundance of one or a few algae in a lake is usually termed as an algal bloom and often results in the formation of surface scum such as that seen in Wascana and the Qu'Appelle lakes during the summer. When algal blooms are aesthetically or economically undesirable we commonly, although somewhat crudely, say that the lake is "polluted."

In some parts of Wascana lake a flagellate alga, *Euglena,* is known to form blooms and an account of this has already been published (*Blue Jay,* 28(1):50-53, 1970). An examination of water samples collected from different localities of Wascana Lake revealed a wide variety of algae, a few of which were abundant and tended to form blooms. To have a better understanding of the mechanisms of algal blooms and also of the inter-relationships between the algae that produce blooms and the ones that do not, an attempt was made to identify systematically the algal flora of Wascana Lake. Consequently, water samples were obtained twice weekly from selected localities of the lake during the months of July and August of 1970. Similar studies were made of water samples collected at irregular intervals from Wascana Lake in June, July, August and the early part of September of 1971. The check-list provided at the conclusion of this article includes all of the algal genera identified. The relative abundance of each genus is also indicated. No attempt was made, however, to identify their species. This check-list of the algae of Wascana Lake is given here with the hope that it will be useful in future investigations of algal blooms in Wascana Lake. Those algae that produce blooms will be discussed in a later article.

Part of this investigation was supported by a financial grant from Labbatt's Brewery of Canada through Pollution Probe, University of Saskatchewan, Regina Campus.

LIST OF GENERA OF ALGAE IN WASCANA LAKE

Cyanophyta (Blue-green Algae)	
Anabaena	*+++
Aphanizomenon	+++
Aphanocapsa	++
Chroococcus	+
Glaucocystis	R
Marssoniella	R
Merismopedia	+
Microcystis	+++
Nostoc	R
Oscillatoria	+
Phormidium	R
Spirulina	R
Chlorophyta (Green Algae)	
Acanthosphaera	R
Actinastrum	R
Ankistrodesmus	+
Chlamydomonas	++
Chlorella	++
Closteridium	R
Closterium	+
Coelastrum	+
Cosmarium	++
Euastrum	+
Enteromorpha	+
Franceia	R
Gonium	R
Golenkinia	+
Micractinium	R
Oedogonium	R
Pandorina	+
Pediastrum	+
Polyedriopsis	R
Protococcus	R
Pyrobotrys	R
Rhizoclonium	+++
Scenedesmus	+++
Selenastrum	R
Spirogyra	+++
Staurastrum	+
Stigeoclonium	R
Chrysophyta (Yellow-green and Golden-brown Algae)	
Botrydiopsis	+
Chrysamoeba	R
Chrysidiastrum	R
Diatoms	+++
Meringosphaera	R
Ophiocytium	R
Euglenophyta (Euglenoids)	
Euglena	+++
Phacus	R
Trachelomonas	R
Chloromonadophyta (Chloromonads)	
Gonyostomum	R

* R(rare), + (present), ++ (present in every collection), +++ (abundant)

WHAT IN THE WORLD?

In the September 1971 *Blue Jay* on page 144 we challenged you to identify an interesting capsulate fruit of a flowering plant. The fruit had been sent in to the Agricultural Research Station in Regina and Keith Best and your *Blue Jay* editor had fun speculating about what family it belonged to. Keith soon identified it as Devil's Claws or Unicorn Plant *(Proboscidea louisianica, Martynia louisiana* in some manuals of botany). I was curious to know whether any of our readers could recognize it from the photograph. The plant does not grow in Canada and I was completely unfamiliar with the family.

The fruit shown in the photograph had been sent in for identification but it had come to Canada in the tail of one of the 85 horses brought in from Colorado for sale at the Inwood Auction Market in Manitoba. It was said that there were "several of these objects in the tails of the horses." The identification was confirmed by the Plant Research Institute in Ottawa. (Incidentally, the photographic credit which I gave to Keith Best should have gone to Bill Fleming.)

Keith Best gave me the information that the plant grows mainly in Arizona, New Mexico and Texas rather than Colorado. The plant is low growing with wide-spreading branches to three feet in length. The leaves are heart-shaped at the base and 4-12 inches across. The flowers are *Gloxinia*-like, two inches long and creamy-white to light red or violet in color.

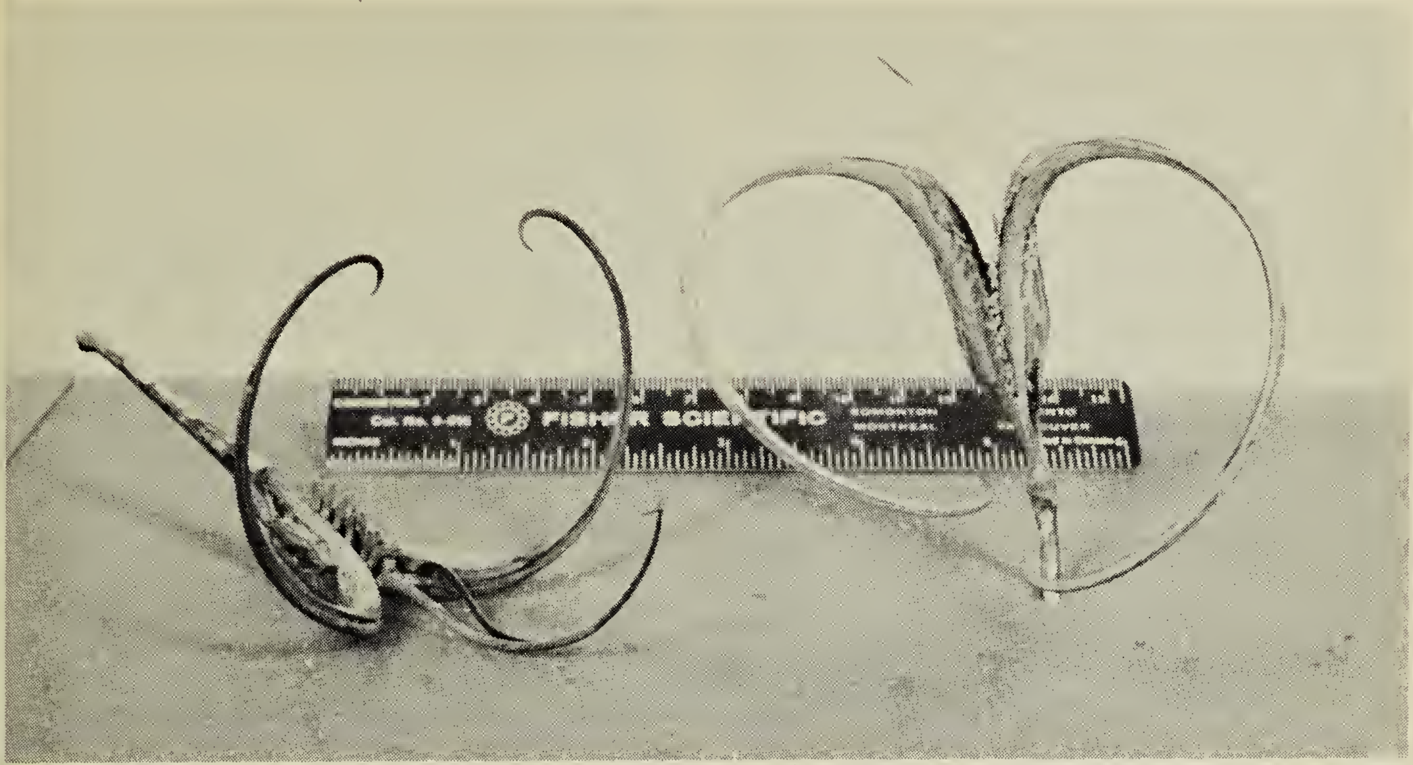


Photo by John Stronski

Devil's Claws collected in Arizona desert by Mrs. Flock, 1971

The fruit is about four inches in length with a curved beak of about the same length. When the fruits mature, they become hard and woody and the beak splits to form two large opposed, hook-like appendages as shown in the accompanying photo by John Stronski.

The September *Blue Jay* was not yet released from the printers when I got my first answer to the question "What in the World?" Betty Cruickshank showed me three Devil's Claws, two of which are shown in the accompanying photo. She knew their common and scientific names. Her specimens had been collected in June, 1971, by Betty Flock near Superstition Mountain in the Arizona desert. Mrs. Flock, who is wintering at Apache Junction in Arizona, had brought some to Regina when she came home for the summer. She said they were also called "Texas Mosquito"; possibly you can guess why.

Soon after the *Blue Jay* was distributed we had three identifications of the unique fruit. All were correct. Dr. Job Kuijt, University of Lethbridge, Alberta wrote " . . . the fruit of a unicorn plant, probably a species of *Proboscidea* of the family Martyniaceae. I have collected similar fruits, a bit shorter and wider, which were lying around in the sandy desert in Baja California, Mexico." Probably another species of *Proboscidea.*

Harold A. Kantrud, wildlife biologist, U.S.D.I., Jamestown, North Dakota wrote, "a seedpod of *Proboscidea louisianica* (Mill.) Thell. (Martyniaceae). Known commonly as unicorn plant, elephant's trunk and martinoe, reference books list it as a southwestern species, occurring as far northeast as West Virginia and Ohio. The plants are occasionally cultivated and used for pickles."

Robert K. Shaw, Cardston, Alberta wrote that it "looks very much like the 2-carpelled, 1-loculed horned capsule of the unicorn plant, *Proboscidea louisianica* . . . . I first saw this plant in fruit on October 5, 1969 while on a field trip with Prof. Stanley L. Welsh of Brigham Young University in Beaver Dam Wash, Washington County, southwestern Utah.

In his unpublished master's thesis on the flora of the Beaver Dam Mountains, (BYU, 1967) Larry Higgins reported its occurrence from southwestern Utah to southern California, at elevations of 3,00 feet or lower, and flowering from June to August.

around the hoof of a horse if stepped

The fruit is also thought to catch

around the hoof of a horse if stepped on, as well as tangling in the mane, tail or fetlock hair. The seeds are probably dispersed in a similar manner by other grazing animals.

Beaver Dam Wash in Utah contains elements of the northern-most extension of the Lower Sonoran Desert and is a most interesting place botanically. At Terry's Ranch in the Wash, a Fremont poplar growing on the bank of a small irrigation ditch has a circumference of 24 feet at a height of five feet above ground. Pomegranate trees also flourish in a small orchard and chinaberry trees shade part of the yard."

I should like to thank all the correspondents for their interesting letters for they have not only added to our knowledge but they have given us a confidence that the *Blue Jay* is read by thoughtful and well-informed people.

I hope that readers who have difficult questions in natural history will present them to the *Blue Jay*. Some reader is sure to know the answer.—*Editor.*

The Blue Jay Bookshelf

ANNUAL BIRD REPORT FOR SOUTHERN VANCOUVER ISLAND. 1970. Edited by J. B. Tatum. Published by the Victoria Natural History Society. 72 pp. $1.90 post-paid. Available from Dr. J .B. Tatum, 416-3187 Shelbourne Street, Victoria, Canada.

This is the first in what is intended to be an annual series of bird reports for an area including Victoria, Duncan and the Saanich Peninsula. It gives details of 235 species observed, and includes migration dates, census results, breeding records and authoritative accounts of rarities.

The reliability of the records is vouched for by the Ornithological Records Committee for Southern Vancouver Island, formed in Victoria in 1970. Any records for the 1970 Report that are rare, out-of-season, or difficult to identify, were handled by the committee. In order to evaluate records the committee insists on carefully documented observations but specimens are not sought. Indeed, the title page of the bulletin bears this quotation from Emerson's essay on Forbearance:

> "Hast thou named all the birds
> without a gun?"

Photographs are included in the report to establish the identity of two species recorded for the first time on Vancouver Island — the Tufted Duck and the Wheatear.

In order to make identification easier in the future, encouragement is being given to the building up of a photo-duplicate file in the Vertebrate Museum of the University of British Columbia and of a collection of tape-recordings of bird songs maintained in Victoria by Mrs. H. M. S. Bell. The whole activity offers an example to other natural history groups interested in preserving valid records. — *Margaret Belcher,* Regina.

STUDIES OF BIRD HAZARDS TO AIRCRAFT. 1971. By V. E. F. Solman, W. W. H. Gunn, M. T. Myres, S. R. Cannings, W. J. Richardson, J. M. Speirs, J. J. C. Kanitz, J. Novak, and H. Blokpoel. Canadian Wildlife Service Report Series Number 14, Information Canada, Ottawa. 105 pp., $1.25.

This book is the latest in a series of reports on research conducted by or in association with the Canadian Wildlife Service. A "Perspective" by V. E. F. Solman, in both English and French, introduces the reader to the comparatively recent problems caused by bird-aircraft collisions and to the development of a bird migration forecast system in Canada. The rest of the book consists of reprints of two general articles previously published elsewhere, followed by five original contributions of a more technical nature. These seven papers are as follows: Bird control and air safety, by V. E. F. Solman (pp. 7-14); A bird-warning system for aircraft in flight, by W. W. H. Gunn and V. E. F. Solman (pp. 15-22); A Canada

Goose migration through the southern interior of British Columbia, by M. T. Myres and S. R. Cannings (pp. 23-34); Radar observations of bird movements in east-central Alberta, by W. J. Richardson and W. W. H. Gunn (pp. 35-68); Numbers, speeds, and directions of migrating geese from analysis of a radar display at Fort William, Ontario, by J. M. Speirs, J. J. C. Kanitz and J. Novak (pp. 69-76); The M33C track radar (3-cm) as a tool to study height and density of bird migration, by H. Blokpoel (pp. 77-94); A preliminary study on height and density of nocturnal fall migration by H. Blokpoel (pp. 95-104).

Like other volumes in this series this book is paper-bound, inexpensive, printed in easily-read type on good quality paper, well illustrated, and apparently well researched. I failed to detect any typing or editing errors. The papers are all well-written, not only those which adopt a general approach but also those which are more technical in nature. The book presents a good spectrum of the bird-aircraft hazard problem, potential methods of overcoming it, and information obtained as a result of studies designed to reduce bird hazards to aircraft. The importance and magnitude of the problem emerge clearly from Solman's article, and the article on the bird-warning system sets the stage for the following papers. The five remaining papers are devoted largely to the study of bird movements by radar, and as such broaden the usefulness of the book to a point where I regard it as a "must" for any students of bird migration. Because of the emphasis on radar studies (clearly stating *both* the advantages *and* the disadvantages of radar as a tool in various studies), I would have preferred to see Hans Blokpoel's excellent papers discussing the technique of using radar in studies of bird movements and methods of improving the forecasting of bird flights come immediately after the two general articles. The other three papers indicate the kind of data that radar can unveil, especially if used in conjunction with data obtained in other ways. For example, Tim Myres clearly points out the advantage of comparative ground observations (in this case by Cannings) in the interpretation of radar data.

In conclusion, I feel that the Canadian Wildlife Service and the authors of the studies presented in this book are to be congratulated on an excellent piece of work. This volume will be useful not only to those concerned with the hazards of birds to aircraft, but also to all students of ornithology. For the latter, the paper by Richardson and Gunn provides one of the best reviews of bird migration studies I have encountered in a long time.—*Martin K. McNicholl*, Winnipeg.

THE WOLF: THE ECOLOGY AND BEHAVIOR OF AN ENDANGERED SPECIES. 1970. By L. David Mech. The Natural History Press, Garden City, New York. +384 pp. $11.95

I can still remember the excitement that I felt when a companion on a field trip shouted to me: "A wolf!" We saw it only briefly, and failing to obtain photos had to be content with an examination of its tracks in the deep snow. Yet that experience remains one of the most vivid and thrilling of all my encounters in nature. In his book, David Mech helps to explain the almost universal fascination that the wolf has for man. Almost everyone either loves or hates the wolf; as Mech points out in his preface, "Few are neither for the Wolf nor against it . . . ." This interest in the wolf has led to a great number of books and articles on the wolf's habits and its relationship to man. Since there has been much fanciful writing on the wolf as well as what is authentically factual, there is a need for a good account of the wolf's life history and an assessment of the books already written on the subject. Mech's book serves both these functions.

A foreword by Ian McTaggart Cowan and a preface by the author are followed by twelve chapters on the life history of the wolf. These chapters are based on Mech's own extensive studies, supplemented by an almost complete survey of the literature and numerous reports communicated personally to the author by other authorities on the wolf. Three appendices and a bibliography complete the book.

A number of the people cited as authorities on the wolf have read and helped revise early drafts of certain chapters of Mech's work, and the whole manuscript was scrutinized by the renowned Canadian expert, Dr. Douglas H. Pimlott. Thus, omissions and errors in fact are few, and only detectable by other experts. Rutter (*Ontario Nat.* 9(2) :31-32, 1971) could criticize only the sections on howling, and Pruitt (*Canadian Field-Nat.* 85: 85-86) detected the omission of one important source of fantasies. In my opinion, Mech is one of the very few scientists who have been successful in writing a well-documented scientific account in a language and style easily comprehended and enjoyed by the layman. He has carefully distinguished well-documented facts from his own opinions or theories. Sources of statements are clearly indicated, whether cited from the literature, communicated personally by others, or taken from his own notes. Although these sources are usually indicated in the body of the text, they are relegated to tables whenever they might otherwise make cumbersome reading. Thus the reader is not burdened with dull lists of source material, but has such lists readily available if he wishes to pursue some topic further. My only criticism of the citations from the literature is that page or chapter numbers are usually not given from books or other long publications.

In addition to being well-organized in its content and easy to read, the book is attractive in its format. The drawings and photographs are attractive to the eye and help to make the author's points more clearly.

I strongly recommend this book to anyone who wants a good life history of the wolf and to everyone interested in a good natural history book. In closing, I echo Russ Rutter's "Amen" to one of Mech's more personal statements (p. 348): "If the Wolf is to survive, the wolf haters must be outnumbered. They must be outshouted, outfinanced, and outvoted. Their narrow and biased attitude must be outweighed by an attitude based on an understanding of natural processes. Finally their hate must be outdone by a love for the whole of nature, for the unspoiled wilderness, and for the Wolf as a beautiful, interesting, and integral part of both."—*Martin K. McNicholl,* Winnipeg.

FAMILIES OF BIRDS. 1971. By Oliver L. Austin, Jr. Illustrated by Arthur Singer. Golden Press, New York. 200 pp. $1.95 (U.S.)

Even the casual naturalist is exposed to broad horizons these days, for natural history films and publications covering the farthest corners of the earth are now commonplace. The person with more than a passing interest in birds is often curious about the relationship between species found in distant places and those in his back yard. Knowledge of the *orders* and *families* of birds can be a big help in this respect. Most of the available literature on this subject consists of works that are large and expensive or frightfully academic. The book under review is designed to satisfy a need for something popular, attractive and yet informative.

Although only six by four inches in size, this little book is packed with information. Faunal regions of the world, the evolutionary development of birds, and bird classification are presented in appealing style. One expects that any book by Oliver Austin will be both authoritative and carefully prepared. This one seems to be. Each of 208 families in 34 orders of birds is discussed. Bear in mind that this covers about 9600 different species, including 900 fossil birds. Characteristics are given of each order and family. If the reader knows to which family a particular bird belongs, he can find some good background on distribution, characteristics, and habits.

Of course, this is generalized information, for in some cases individual species within a family are pretty diverse. Still, members of a family have some things in common; that is why they are placed in the same family, and this is the information provided. A colour illustration of one or more species is given for each family. These are surprisingly large pictures nicely done by Arthur Singer. Of course, only a few birds are shown. Of the 241 species of swans, geese and ducks of the world, for example, a mere 11 are pictured.

As a brief guide to bird classification and family characteristics, this book is a good buy. The small size is presumably aimed at reducing costs, for very few people would want to carry a work of this sort into the field. A "deluxe Goldencraft" edition in hard cover and larger format is planned (retailing at $5.95), and this will probably be preferred by many. I found the present edition hard to keep open and the print a little too small for easy reading.—*R. W. Nero*, Winnipeg.

ECOLOGICAL ISOLATION IN BIRDS.. 1971. By David Lack. Harvard University Press, Cambridge, Massachusetts. 404 pp. Price $12.00.

Each kind of animal living in a natural community must have an ecology different from every other species in that community in order to survive. Another way to put it is that species which can live together are ecologically isolated from each other. It is now believed that speciation (evolution) can only occur if the original species population is first separated into two populations which are isolated from each other. Thus when new species evolve they are separated from their closest related species. Species which are closely related, however, do live in the same community and they can do so because as a result of competition they have evolved differences in ecology. The nature of this separateness of species is important in considering how new species diversify into different ways of life, why there are so many different kinds of animals and plants, and why it is often difficult to introduce foreign species into a community.

David Lack's new book discusses ecological isolation in birds. He chooses birds because birds are the group of animals he can think most critically about and because the first field studies on ecological isolation were done on birds. His work is comprehensive, for he discusses all examples of ecological isolation between congeneric species that are well enough known for analysis. The small bulk of the book emphasizes how few of the approximately 8500 species of birds in existence have been studied.

The concept of ecological isolation is discussed in a brief introductory chapter. Dr. Lack then devotes two chapters to the widespread genus *Parus*. This genus (titmice, chickadees, and the various old-world tits) contains 45 species, 9 in Europe, 23 in Asia and 10 in Africa and 10 in North America. The European forms have been studied intensively since the second world war, primarily at the author's home institution, the Edward Grey Institute of Field Ornithology at Oxford University This is the best documented example of ecological isolation in a large and diverse genus.

The next few chapters discuss all remaining examples of congeneric species coexisting in the European avifauns. There is a separate chapter on nuthatches, which includes all species in the genus *Sitta* in addition to the European ones. Studies on ecological isolation in North American birds are reviewed in one short chapter, followed by two chapters on tropical birds. The last three chapters are on island species including the Galapagos finches, Hawaiian sicklebills, white-eyes and an analysis of ecological islation in the West Indian avifauna.

Dr. Lack concludes that closely related species occupy separate but adjoining ranges when they have ecologies so similar that they cannot exist together and when each is better adapted to its own range than the other species is. This situation occurs rarely except for birds living on islands and fruit-eating birds.

Usually closely related species occupy the same geographic area, and most commonly they are ecologically isolated by feeding habits. This is particularly true of genera of larger birds such as the falcons or accipiters, different species of which occupy the same habitat but take different foods. In these instances differences in body size are associated with the different foods taken. Among congeneric passerine birds in Europe, however, the commonest form of ecological isolation is by habitat difference. This could be because passerines are so small that two related species can specialize, for example, either in feeding on needle-leaved trees or feeding on deciduous broad-leaved trees, and thus they can live in the same area while exploiting different habitats.

An interesting finding is that a number of congeneric European species which coexist in Europe have separate geographic ranges in Africa in the winter. This suggests that tropical communities are so ecologically filled by the native species that temperate zone migrants have difficulty finding an area in which they can live.

Chapter 8 summarizes North American studies of ecological isolation, and these will probably be of greatest interest. The Red-shafted and Yellow-shafted Flickers, and the Baltimore Oriole and Bullock's Oriole, are two examples of species which have come together recently as a result of human settlement and now inter-breed along a zone of contact in the great plains. In both cases contact between the related species was made possible by human disturbance of the habitat — in this case planting trees on the once almost treeless prairies.

The Eastern and Western Meadowlarks are two species which were formerly isolated but now make broad contact in central North America as a result of replacement of forest by cultivated grassland. Where the species meet they do coexist but the males exclude members of both species from their territories. This interspecies territoriality is probably the first stage in competition which could lead to evolution of separated ecologies.

Two other examples of ecological isolation deserve mention because they are in groups that occur in this province. There are many instances of multiple coexistence of members of the same genus among the 26 species of wood warblers breeding in Saskatchewan. The fact that many occupy the same habitat and feed in the same trees leads to the suggestion that their ecologies overlap. Detailed studies of the feeding habits of six species, however, have disclosed that they differ in the parts of the spruce trees in which they feed most frequently and in the way in which they search tree branches for food. While some overlap in feeding exists, it was concluded that the observed differences were great enough to allow coexistence. Another study showed that in some of these same species the males hunted higher in trees than the females. Thus the warblers exhibit the most complex case of ecological separation yet studied.

Four congeneric species of arctic sandpipers (Pectoral, Dunlin, Baird's and Semipalmated) studied on their arctic breeding grounds in Alaska ate many of the same species of insects, suggesting broad overlap of feeding ecology in spite of big differences in body size and length of bill. These species may be ecologically isolated outside the breeding area, either on migration or on their winter range or both, and size differences and bill differences in the group may have evolved as a result of competition off the breeding area. This is an extraordinary hypothesis and it would be most interesting if it could be shown to be true.

There is much not known about ecological isolation among the warblers and migrating shorebirds and any Saskatchewan bird student could make an important contribution to our understanding of bird faunas by undertaking to study these problems. Perusal of this book will also suggest other related species in the province which need more study. The waterfowl, Franklin's and Bonaparte's Gulls, vireos and the many Fringillidae that occur here, provide examples. The provincial check-list will suggest many others.

The book is well written in the author's usual clear readable style. It is free from professional jargon and should be readily understood by the informed layman. Moreover, Dr. Lack has simplified the presentation by relegating the details of the ecological separation of the species discussed to Appendices.—*William J. Maher,* Saskatoon.

Letters and Notes

IN DEFENCE OF THE COYOTE

Some time ago a notice was posted by the Rural Municipality of Rocanville warning that about 10 coyote poison baits had been set out at various points. A protest to the Reeve brought the explanation that "it was the will of the ratepayers at the annual meeting." Knowing the usual small attendance at such meetings, I doubt whether such an inhumane decision would reflect the opinion of the majority of the community.

Enclosed is a letter I recently received from Alvin Griswold of Spy Hill. Alvin has spent his life in the Qu'Appelle Valley country and as a hunter and trapper in earlier years he can speak without bias.—*E. Symons,* Rocanville, Sask.

* * *

I thought it best to say a few words in defence of the coyote. There have been parts of the country where the coyote has been wiped out; two years later the fields have been overrun with mice. We had that here years ago and the damage could not be counted.

The coyote is the key to the balance of Nature in this park country. For instance, the coyote is the world's best mouser. It knows no equal. I have watched the coyote walking over the snow, ear to the snow. It can hear the mice digging tunnels under the snow. The coyote will leap up, come down with four feet tight together and crush the tunnel, dig in with its mouth and catch the mouse, throw the mouse in the air and catch it again. The coyote often catches as many as 30 mice a day.

Coyotes are blamed for killing a lot of sheep when the sheep have actually been killed by dogs. It is true that the coyote will take chicken; I can't blame him, I like chicken myself! But most people fence chicken in nowadays. If they don't, they should.

I hate poison and don't want to see it used at all. I have often seen chickadees, woodpeckers and nuthatches at the poisoned bait and wonder how many dead birds result from such poisoning.—*Alvin Griswold,* Spy Hill, Sask.

EAGLES SLAUGHTERED

On August 3, 1971, the radio carried an almost incredible report that some 800 eagles had been shot from helicopters in Wyoming. The accuracy of the report has been established, however, with the publication of a detailed article in the September, 1971 issue of *Audubon.* Granted immunity from prosecution, the helicopter pilot, J. O. Vogan, testified before Senator McGee, chairman of the subcommittee on Agriculture, Environmental and Consumer Protection to the effect that wealthy landowners and sheep breeders, in defiance of federal and state laws, were indeed hiring people to slaughter eagles, coyotes, foxes, bobcats and even some antelope, deer, elk and Canada geese.

Since the man responsible for the death of most of the 800 eagles recorded by Vogan is the father-in-law of the rancher charged with the illegal killing and baiting of antelope (*Blue Jay,* 29(3):p. 157, September 1971) which caused the death of at least 22 eagles, it can be assumed that that operation was aimed at eagles as well as at coyotes.

It is to be hoped that Canadian laws will soon prevent the use of poisoned baits and the shooting or harassing of animals from any kind of vehicle. If you know of illegal acts which have been committed in your area, please write to the *Blue Jay* editor.—*Editor*, Box 1321, Regina.

FRIENDSHIPS

Attending a Natural History Society Summer Meeting can result in the formation of friendships which will provide many hours of interesting discussion on hobbies and travel. Such has been our experience anyway.

Several years ago at the meeting at Fort Qu'Appelle we met Mr. Edgar W. Sullivan of Dundurn. A common interest in Indian artifacts led to later correspondence and visits from Mr. Sullivan and his kindly companion of many years, visits which have given our family idea-filled hours of enjoyment.

From Mr. Sullivan's vehicle may come boxes of beautiful slides—flowers, travel, animals and history. Next will come trays of beautifully polished rocks, collected from many places. Hand-made cribbage boards of inlaid design and made from local woods share the space with displays of bridle bits from bygone years.

A coin collection or display cases of artifacts may also appear, depending on whom Mr. Sullivan is visiting. Among other things, licence plates and fruit jars, samples of barbed wire or match books, seashells or wood samples may be brought forth. A good camera accompanies Mr. Sullivan everywhere, plus the gift of making his travels come alive for his listeners.

All this would be enough to keep a young person very busy but when one realizes that this highly entertaining couple are 84 and 89 years of age, one marvels at the zest and good health that they possess. If younger people would take up even one hobby, they would help ensure themselves of many hours of shared interests in later years, with resulting benefit to their health and morale.

We have been able to attend only those summer meetings held at Batoche, Fort Qu'Appelle, and Indian Head, but have thoroughly enjoyed all three and the friendships formed at them. Certainly, our friendship with Mr. Sullivan has made our lives richer.—*Hazel Paton*, Oxbow.

SIGHTING OF A SWALLOW-TAILED KITE AT TISDALE, SASKATCHEWAN,

On a Saturday morning in early April 1921, my late brother Maurice and I were walking across our farm (3½ miles northwest of Tisdale) heading for the Doghide River, a favourite area of ours for bird watching. Suddenly we both spotted the strangest bird we had ever seen, flying towards us. As we watched in amazement, a bird we recognized as a Swallow-tailed Kite passed in front of us, less than 100 feet away and no more than 50 feet high. It was heading into a strong northwest wind, and the graceful flight of this black and white bird with its long, pointed wings and deeply forked tail will never be forgotten.—*Stanley J. Street*, 3724 Happy Valley Road, RR1, Victoria, B.C.

Editor's Note: This species is listed as an accidental straggler for Saskatchewan on the basis of three sight records over a period of 35 years' observations by George Lang as follows: "one at Fort Qu'Appelle, May 24, 1890, one near Lake Katepwa, June 9, 1898, and one near Regina, June 20, 1906" (Mitchell, *Catalogue of the birds of Saskatchewan*, 1924:108). There is also a record of an observation in Regina in the spring of 1955 by Elmer Fox. Godfrey (*The birds of Canada*, 1966:86) regards it as accidental in Canada, noting single specimens for Ontario and Nova Scotia (prior to 1907, 1905) and "unconfirmed additional (mostly old) sight records for Saskatchewan, Manitoba and Ontario. Formerly when more numerous within its normal range it probably strayed to Canada more frequently than it does today."

C. Stuart Houston (pers. corres., September 17, 1971) commented on this belated record, which is not mentioned in Maurice Street's publications, as follows: "Maurice was a meticulous record-keeper, but did not begin keeping his records until 1922, the year after the purported sighting of the Kite. He published only those records for which he had a date in his notebooks, and he published only records for species already on the Saskatchewan list, validated by a specimen . . . . This sighting was just outside the 30-mile radius used for his first mimeographed publication: *A list of the birds of Nipawin, Saskatchewan,* Cont. No. 2, Yorkton, Nat. Hist. Soc., 1943. It was well outside the 20-mile radius generally used for Nipawin records in *Birds of the Saskatchewan River, Carlton to Cumberland* (Houston and Street, 1959) . . . . It was, of course, Maurice's older brother Stan who initiated Maurice into the habit of careful birdwatching, with considerable encouragement from E. W. Van Blaricom, then a lawyer in Tisdale. My guess is that the record is valid . . . ."

OWL BANDING

On the evening of May 22, 1971, Dr. S. Houston, Arnold Nijssen and Bryan Stepaniuk came to band the young Great Horned Owls in our district. Four of us joined them and between 6:00 and 9:30 p.m. we visited seven nests and banded 11 young owls. Three of the young owls jumped from their nests when the climber was part way up the tree. They were banded and sent back up to their nests by a large string converted into an elevator operation. One nest had fallen down and the two young were found at the base of the tree. They were banded and placed part way up a slanting tree. One young which had already left its nest was found on a brush pile. Arnold Nijssen caught it and after it was banded it was returned to the brush pile. One of the seven nests was empty; evidently the young birds had already deserted the nest. None of the nests contained more than two young.

Next morning we were up early and visited four nests and banded six young before breakfast. Two of the nests contained two young each and two contained only one. After a delicious breakfast prepared by my mother we set out again. We visited one more nest in our district and banded two more Great Horned Owls, then we went to the Crystal Springs area.

In the Crystal Springs area we visited six nests and banded 14 young owls. One nest had three young and one contained four. The four young all left the nest as the tree was being climbed. They were banded but not sent up on the string elevator, as two other young were, because they were big and ready to leave the nest. The parent owls at one nest were really angry and one of them left its claw marks on Dr. Houston's shoulder.

This banding trip was very enjoyable. I was chief pellet collector. The pellets, which are found under each nest, are the regurgitated remains of animals that the owls cannot digest. The pellets contain fur and bones and they can be analysed to see what the owls have eaten and whether the food changes from year to year in the same area.

I am looking forward to next year's banding expedition in this district and am wondering how many young there will be in each nest in 1972.—Condensed from a letter from *Rosemary Nemeth,* Junior Naturalist, Yellow Creek, Saskatchewan.

SASKATCHEWAN CHRISTMAS BIRD COUNT 1971

List the number of each bird species seen on the One Best Day from Tuesday, December 21, 1971 through Sunday, January 2, 1972. In addition, list other species observed during the above dates. See March 1971 *Blue Jay* for other details. Send reports as soon as possible to Mrs. Mary Houston, 863 University Drive, Saskatoon.

Photo by Gary Seib

Robert W. Nero autographing a copy of his new book *Birds of Moose Mountain, Saskatchewan* at the annual banquet, Moose Jaw, October 16, 1971.

NEW BOOK PUBLISHED

BIRDS OF MOOSE MOUNTAIN SASKATCHEWAN. 1971. By Robert W. Nero and M. Ross Lein, Sask. Nat. Hist. Soc. Special Publication No. 7, 56 pp. $2.00.

This attractive booklet, which will be reviewed in the next *Blue Jay*, was published just in time for the annual meeting in Moose Jaw and in lots of time for purchase as a Christmas gift for anyone interested in Saskatchewan birds. All seven special publications may be obtained from the *Blue Jay* Bookshop, Box 1121, Regina. Details for the earlier publications are as follows:

No. 1. A guide to Saskatchewan mammals. By W. Harvey Beck. 1958. 52 pages. 50 cents.

No. 2. The birds of the Saskatchewan River, Carlton to Cumberland. By C. Stuart Houston and Maurice G. Street. 1959. 205 pages. $1.50.

No. 3. Birds of Regina. By Margaret Belcher. 1961. 76 pages. $1.00.

No. 4. The Blue Jay Index, 1942-1960. By Joyce Deutscher. 1962. 36 pages. $2.00.

No. 5. Birds of the Lake Athabasca region, Saskatchewan. By Robert W. Nero. 1963. 143 pages. $2.50.

No. 6. The birds of northeastern Saskatchewan. By Robert W. Nero. 1967. $2.00.

AWARD WINNERS, 1971

Photo by Gary Seib

Fred W. Lahrman (left) and Thomas White

CLIFF SHAW AWARD

Each year since the death of Cliff Shaw in 1959 the Saskatchewan Natural History Society has given the Cliff Shaw Award to the person contributing the best item to the *Blue Jay* since the preceding annual meeting. This year the award was presented to Fred Lahrman. The editor, who presented the award, mentioned the Lahrman photo of the big cow moose running over the flat plains just south of Regina and quoted from the article to point out some qualities of the Lahrman style and humour. The award was made mostly, however, for the two articles on natural hybrids in birds, the White-front X Ross Goose and the Cinnamon X Blue-winged Teal. Mr. Lahrman is artist and preparator at the Saskatchewan Museum of Natural History and as such is in an excellent position to stimulate others to become more interested in nature. It is hoped that he will continue to contribute to the *Blue Jay* in the same invaluable manner he has done in the past.

1971 CONSERVATION AWARD

At the Saskatchewan Natural History Society annual meeting in Moose Jaw, October 16, 1971 the society's 1971 Conservation Award was presented by our new president Mr. J. A. Wedgwood to Thomas White of Regina. Mr. White, an architect, is chairman of the conservation committees of both the Regina and the Saskatchewan Natural History Societies and it is largely through his efforts that the Saskatchewan Government this year by Order-in-Council established the Wildcat Hill Wilderness Area. This area, some 40,000 acres in the Pasquia Hills, is the first legally declared wilderness area in Saskatchewan in which there will be no lumbering, no mining and no roads. We congratulate Thomas White and express the hope that he will continue to work for the cause of conservation in general and for the setting aside and protection of natural areas in particular.

SASKATCHEWAN NATURAL HISTORY SOCIETY

FINANCIAL STATEMENT — YEAR ENDING SEPTEMBER 30, 1971

INCOME		
Memberships (including sales of *Blue Jay*)	$ 5,339.59	
Memberships (extra re supporting and sustaining)	1,364.90	$ 6,704.49
Spec. Pub. No. 1 — Guide to Sask. Mammals	25.33	
Spec. Pub. No. 2 — Birds of Sask. River	61.37	
Spec. Pub. No. 3 — Birds of Regina	48.90	
Spec. Pub. No. 4 — Blue Jay Index	4.00	
Spec. Pub. No. 5 — Birds of Lake Athabasca	69.88	
Spec. Pub. No. 6 — Birds of Northeastern Sask.	33.60	
Publication — Birds of the Elbow	4.75	
Donations (general)	550.00	
Summer meeting (net)	60.55	
Interest (bank accounts and bonds)	187.48	
Bookshop net profit (6% of sales)	252.27	1,298.13
		$ 8,002.62
EXPENSE		
Printing of *Blue Jay* (4 issues)	$ 4,575.01	
Advertising and promotion (Newsletter)	348.34	
Honoraria	312.04	
Office rental and lights	47.56	
Postage	366.28	
Office supplies and stationery	252.47	
Bank charges less US. premium	2.76	
Affiliation fees	20.00	
Miscellaneous office and admin. expense	94.43	
Annual meeting (net)	65.37	6,084.26
EXCESS OF INCOME OVER EXPENDITURE		$ 1,918.36

STATEMENT OF ASSETS AND LIABILITIES AS AT SEPTEMBER 30, 1971

ASSETS		
Cash on hand		$ 40.00
Cash in bank (chequing)—S.N.H.S.	$ 3,233.04	
—Bookshop	338.22	
Cash in bank (savings)—S.N.H.S. ($993.68, 9.87)	1,003.55	4,574.81
Canada Savings bonds		5,000.00
Stock on hand (Bookshop)		706.03
Accounts receivable (less prepaid orders)		292.32
Deposit with Postal Department		66.52
Deferred expense		77.44
Balance of publication subsidy re: Hours and the Birds	400.33	
Less royalties and local profit during past year	59.73	340.60
		$11,097.72
LIABILITIES		
Trust Fund re: Refuge and Sanctuaries		
Balance at September 30, 1970	1,816.49	
Plus donations during past year	14.00	
	1,830.49	
Less expenses: 1971 lease and taxes	$ 435.22	
Miscellaneous	10.00	1,385.27
Education Tax		36.73
		1,422.00
NET WORTH		
Balance at September 30, 1970	7,757.36	
Plus surplus for year ending September 30, 1971	1,918.36	9,675.72
		$11,097.72

SASKATCHEWAN NATURAL HISTORY SOCIETY

BLUE JAY SUBSCRIPTION AND SNHS MEMBERSHIP RENEWAL FORM

Regular membership (for all members, including juniors and institutions)	$ 3.00
Supporting membership	5.00
Sustaining membership	10.00

Any amount in excess of $3.00 is creditable as an income tax deduction and receipts for the excess amount will be mailed **upon request.**

☐ Income tax receipt required

Bulk subscriptions to schools and to organized junior naturalist groups will be $3.00 for the first subscription and $1.00 for each additional subscription to the same address (minimum of 5 subscriptions).

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NAME (Please print clearly): ....

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Sustaining ($10.00)	☐	☐	------

Check one:

☐ I presently hold a **Regular** ☐, **Supporting** ☐, **Sustaining** ☐ membership with expiry date of ...., 19.........

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Do you know of any person interested in natural history and conservation who does not receive the *Blue Jay.* If you do, please list name and address on back of this page and we will send a sample *Blue Jay* and an invitation to join our society.

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	Date stamp	Receipt No..............
		Date stamp............

Please Tear Out and return to George Dodd, Box 1321, Regina. Make all cheques and money orders payable to the SNHS.

Please do it now! Please remit before December 31, 1971.

THE SASKATCHEWAN NATURAL HISTORY SOCIETY

BOARD OF DIRECTORS (October, 1971, to October, 1972)

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Recording Secretary	Marie I. Gillespie, 221 11th Street E., Saskatoon

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APPOINTED DIRECTORS

Blue Jay Archives: Gary Seib, 2234 Angus Street, Regina; **Blue Jay Bookshop**: Frank Brazier, 2657 Cameron Street, Regina; **Circulation**: Lorne Scott, Saskatchewan Museum of Natural History, Regina; **Conservation**: Thomas White, 2580 Retallack Street, Regina; **Editor of Newsletter**: Muriel Galloway, 1549 Spadina Crescent E., Saskatoon; **Publicity**: Rose McLaughlin, Indian Head; Gordon Browne, 120 Acadia Drive, Saskatoon; **Special Publications**: C. Stuart Houston, 863 University Drive, Saskatoon; **Supervisor of Services**: James Jowsey, 2635 Nineteenth Avenue, Regina.

THE BLUE JAY

Blue Jay Editor: George F. Ledingham; **Assistant Editor**, Robert W. Nero; **Junior Naturalists**: Joyce Deutscher.

All items for publication should be submitted to George F. Ledingham, Editor, 2335 Athol Street, Regina.

SUBSCRIPTION-MEMBERSHIPS

The classes of memberships in the SNHS are as follows: *Regular*, $3.00; *Supporting* $5.00; *Sustaining* $10.00. Supporting and sustaining memberships include the regular membership fee plus a donation for which a receipt is available for income tax purposes, upon request. Bulk orders (minimum of five to one address) are available to junior club members and to educational institutions at the rate of $3.00 for the first subscription and $1.00 for each additional one.

Send all renewals and new memberships to THE TREASURER, SNHS, Box 1321, Regina, Saskatchewan. (Note: Bookshop orders and general inquiries should be sent to Box 1121.)

REPRINTS

Requests for quantities of reprints of any article printed in the *Blue Jay* should be sent to Printcraft Ltd., Regina, Sask., within one month of publication. Contributors wishing a few extra copies of the current *Blue Jay* may get them at cost. Requests for these should be made to the Editor when material is submitted for publication.

J.T.S. Reynolds
Gainsborough, SK.

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